SOIL SURVEY OF

# Marion County Area, Florida

United States Department of Agriculture
Soil Conservation Service
in cooperation with
University of Florida
Institute of Food and Agricultural Sciences
Agricultural Experiment Stations
Soil Science Department

This is a publication of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and agencies of the States, usually the Agricultural Experiment Stations. In some surveys, other Federal and local agencies also contribute. The Soil Conservation Service has leadership for the Federal part of the National Cooperative Soil Survey. In line with Department of Agriculture policies, benefits of this program are available to all who need the information, regardless of race, color, national origin, sex, religion, marital status, or age.

Major fieldwork for this soil survey was completed in the period 1962–73. Soil names and descriptions were approved in 1974. Unless otherwise indicated, statements in the publication refer to conditions in the survey area in 1973. This survey was made cooperatively by the Soil Conservation Service and the University of Florida, Institute of Food and Agricultural Sciences, Agricultural Experiment Stations, Soil Science Department. It is part of the technical assistance furnished to the Marion Soil and Water Conservation District.

Soil maps in this survey may be copied without permission, but any enlargement of these maps could cause misunderstanding of the detail of mapping and result in erroneous interpretations. Enlarged maps do not show small areas of contrasting soils that could have been shown at a larger mapping scale.

# HOW TO USE THIS SOIL SURVEY

THIS SOIL SURVEY contains information that can be applied in managing farms, ranches, and woodlands; in selecting sites for roads, ponds, buildings, and other structures; and in judging the suitability of tracts of land for farming, industry, and recreation.

## Locating Soils

All the soils of the Marion County Area are shown on the detailed map at the back of this publication. This map consists of many sheets made from aerial photographs. Each sheet is numbered to correspond with a number on the Index to Map Sheets.

On each sheet of the detailed map, soil areas are outlined and are identified by symbols. All areas marked with the same symbol are the same kind of soil. The soil symbol is inside the area if there is enough room; otherwise, it is outside and a pointer shows where the symbol belongs.

## Finding and Using Information

The "Guide to Mapping Units" can be used to find information. This guide lists all the soils of the survey area in alphabetic order by map symbol and gives the capability classification of each. It also shows the page where each soil is described and the page for the capability unit to which the soil has been assigned.

Individual colored maps showing the relative suitability or degree of limitation of soils for many specific purposes can be developed by using the soil map and the information in the text. Translucent material can be used as an overlay over the soil map and colored to show soils that have a slight limitation or suitability. For example, soils that have a slight limitation for a given use can be colored green, those with a moderate limitation can be colored yellow, and those with a severe limitation can be colored red.

*Farmers and those who work with farmers* can learn about use and management of the soils from the soil descriptions and from the discussions of capability units and woodland groups.

*Foresters and others* can refer to the section "Woodland," where the soils of the survey area are grouped according to their suitability for trees.

*Game managers, sportsmen, and others* can find information about soils and wildlife in the section "Wildlife."

*Community planners and others* can read about soil properties that affect the choice of sites for dwellings, industrial buildings, and recreation areas in the sections "Town and Country Planning" and "Recreation."

*Engineers and builders* can find, under "Engineering," tables that contain test data, estimates of soil properties, and information about soil features that affect engineering practices.

*Scientists and others* can read about how the soils formed and how they are classified in the section "Formation and Classification of Soils."

*Newcomers in Marion County Area* may be especially interested in the section "General Soil Map," where broad patterns of soils are described. They may also be interested in the section "Environmental Factors Affecting Soil Use."

***Cover:*** **Thoroughbred horse farm. The pasture of improved bahiagrass is on Kendrick soils. The landscape is typical of the Kendrick-Hague-Zuber association, which has a high potential for improved pasture of deep-rooting grasses and legumes.**

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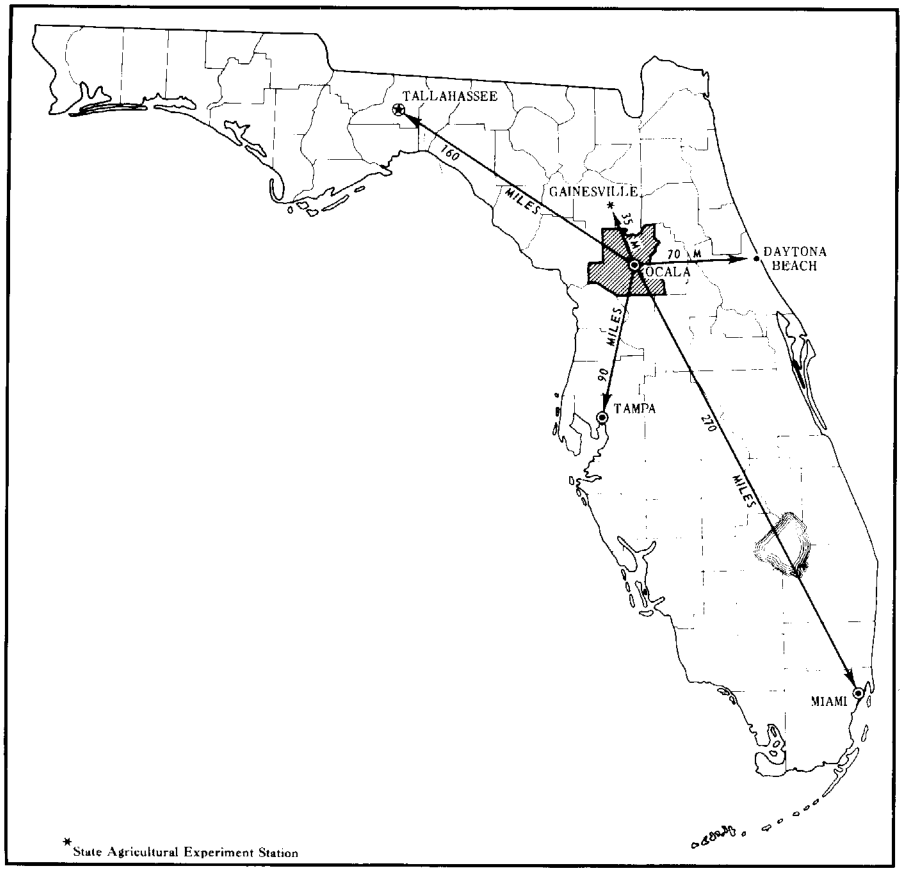
TALLAHASSEE
160 MILES
GAINESVILLE
*
35 M
70 M
DAYTONA BEACH
OCALA
90 MILES
TAMPA
270 MILES
MIAMI
*State Agricultural Experiment Station

Location of Marion County Area in Florida.

# SOIL SURVEY OF MARION COUNTY AREA, FLORIDA

BY BUSTER P. THOMAS, LLOYD LAW, JR., AND DANIEL L. STANKEY, SOIL CONSERVATION SERVICE[1]

UNITED STATES DEPARTMENT OF AGRICULTURE, SOIL CONSERVATION SERVICE, IN COOPERATION WITH UNIVERSITY OF FLORIDA, INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES, AGRICULTURAL EXPERIMENT STATIONS, SOIL SCIENCE DEPARTMENT

MARION COUNTY AREA is in Marion County, which is in north-central Florida. See facing page. The survey area is bounded by Alachua and Putnam Counties on the north; Levy County on the west; the Withlacoochee River, which is between Marion and Citrus Counties, on the southwest; Sumter and Lake Counties on the south; and the Oklawaha River on the east.

The survey area is 1,087 square miles, or 695,586 acres. Ocala, the county seat, is in the east-central part of the survey area. The survey area is about 36 miles long, north to south, and 38 miles wide. According to the 1970 census, the area has a population of about 69,000. Although the population is centered around Ocala and the other small urban areas, a large percentage resides in the predominantly rural parts of the survey area.

The survey area has been associated mainly with farming and forestry throughout its history. It has one of the most diversified farming programs within the State. During recent years, the number of small industries has increased. As a result of the influx of more people into the area, more of the land previously used for crops, pasture, and forests is now under urban development.

The survey area is mostly rolling uplands and to a lesser extent nearly level flatwoods. Most of the flatwoods are in the northeast, but small areas are in the extreme southeastern, southwestern, and northwestern parts.

## *How This Survey Was Made*

Soil scientists made this survey to learn what kinds of soil are in the Marion County Area, where they are located, and how they can be used. The soil scientists went into the survey area knowing they likely would find many soils they had already seen and perhaps some they had not. They observed the steepness, length, and shape of slopes, the kinds of native plants or crops, the kinds of rock, and many other facts about the soils. They dug many holes to expose soil profiles. A profile is the sequence of natural layers, or horizons, in a soil; it extends from the surface down into the parent material that has not been changed much by leaching or by the action of plant roots.

The soil scientists made comparisons among the profiles they studied, and they compared these profiles with those in counties nearby and in places more distant. They classified and named the soils according to nationwide, uniform procedures. The *soil series* and the *soil phase* are the categories of soil classification most used in a local survey.

Soils that have profiles almost alike make up a soil series. Except for different texture in the surface layer, all the soils of one series have major horizons that are similar in thickness, arrangement, and other important characteristics. A soil series is commonly named for a town or other geographic feature near the place where a soil of that series was first observed and mapped. Kendrick and Zuber, for example, are the names of two soil series. All the soils in the United States having the same series name are essentially alike in those characteristics that affect their behavior in the undisturbed landscape.

Soils of one series can differ in texture of the surface layer and in slope, stoniness, or some other characteristic that affects use of the soils by man. On the basis of such differences, a soil series is divided into phases. The name of a soil phase indicates a feature that affects management. For example, Kendrick loamy sand, 2 to 5 percent slopes, is one of three phases within the Kendrick series.

Some soils are closely related to a soil series, but depart from it in at least one differentiating characteristic and are of too small extent to justify establishing a new series. These are called soil variants. They take the name of the closely related series. The name of mapping units, however, is modified by the chief distinguishing feature. Fellowship gravelly loamy sand, gravelly subsoil variant, 2 to 5 percent slopes, for example, is the name of a mapping unit in the Fellowship variant. A soil recognized as a variant in one survey area can later be designated as a separate series if it is found to be of important extent.

After a guide for classifying and naming the soils had been worked out, the soil scientists drew the boundaries of the individual soils on aerial photographs. These photographs show woodlands, buildings, field borders, trees, and other details that help in drawing boundaries accurately. The soil map at the back of this publication was prepared from aerial photographs.

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[1] Others participating in the field survey were T. C. MATHEWS and M. M. STRIKER, University of Florida, Agricultural Experiment Stations, and R. M. CRAIG and W. R. LLEWELLYN, Soil Conservation Service.

The areas shown on a soil map are called mapping units. On most maps detailed enough to be useful in planning the management of farms and fields, a mapping unit is nearly equivalent to a soil phase. It is not exactly equivalent because it is not practical to show on such a map all the small, scattered bits of soil of some kind that have been seen within an area that is dominantly of a recognized soil phase.

Some mapping units are made up of soils of different series, or of different phases within one series. Two such kinds of mapping units are shown on the soil map of Marion County Area: soil complexes and soil associations.

A soil complex consists of areas of two or more soils so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area of a complex contains some of each of the two or more dominant soils, and the pattern and relative proportions are about the same in all areas. Generally, the name of a soil complex consists of the names of the dominant soils, joined by a hyphen. Pedro-Arredondo complex, 0 to 5 percent slopes, is an example.

A soil association is made up of adjacent soils that occur as areas large enough to be shown individually on the soil map but are shown as one unit because the time and effort of delineating them separately cannot be justified. There is a considerable degree of uniformity in pattern and relative extent of the dominant soils, but the soils can differ greatly one from another. The name of an association consists of the names of the dominant soils, joined by a hyphen. Anclote-Tomoka association is an example.

In most areas surveyed there are places where the soil material is so rocky, so shallow, so severely eroded, or so variable that it has not been classified by soil series. These places are shown on the soil map and are described in the survey, but they are called land types and are given descriptive names. Urban land is an example.

Some soils in the survey area are not classified at the level of soil series because the soil properties vary widely, commonly within short distances. Udalfic Arents are an example.

While a soil survey is in progress, soil scientists take soil samples needed for laboratory measurements and for engineering tests. Laboratory data from the same kinds of soil in other places are also assembled. Data on yields of crops under defined practices are assembled from farm records and from field or plot experiments on the same kinds of soil. Yields under defined management are estimated for all the soils.

Soil scientists observe how soils behave when used as a growing medium for native and cultivated plants and as material for structures, foundations for structures, or covering for structures. They relate this behavior to properties of the soils. For example, they observe that absorption fields for onsite disposal of sewage fail on a given kind of soil, and they relate this failure to slow permeability or a high water table. They see that streets, road pavements, and foundations for houses are cracked on a given kind of soil, and they relate this failure to a high shrink-swell potential. Thus, they use observation and knowledge of soil properties, together with available research data, to predict limitations or suitability of soils for present and potential uses.

After data have been collected and tested for the key, or benchmark, soils in a survey area, the soil scientists set up trial groups of soils. They test these groups by further study and by consultation with farmers, agronomists, engineers, and others. They then adjust the groups according to the results of their study and consultation. Thus, the groups that are finally evolved reflect up-to-date knowledge of the soils and their behavior under current methods of use and management.

## *General Soil Map*

The general soil map at the back of this survey shows, in color, the soil associations in the Marion County Area. A soil association is a landscape that has a distinctive proportional pattern of soils. It typically consists of one or more major soils and at least one minor soil, and it is named for the major soils. The soils in one association can occur in another, but in a different pattern.

A map showing soil associations is useful to people who want a general idea of the soils in the survey area, who want to compare different parts of the area, or who want to know the location of large tracts that are suitable for a certain kind of land use. Such a map is a useful general guide for broad planning on a watershed, a wooded tract, or a wildlife area or for broad planning of engineering works, recreational facilities, and community developments. It is not a suitable map for detailed planning for management of a farm or field or for selecting the exact location of a road, building, or similar structure because the soils in any one association ordinarily differ in slope, depth, stoniness, drainage, and other characteristics that affect their management.

Tables 1 and 2 show, by soil associations, the limitations, suitability, and restrictive features of soils for selected uses. Descriptions of these uses are under the headings "Engineering," "Recreation," and "Town and Country Planning."

The 10 soil associations in this survey area have been grouped into general kinds of landscapes for broad interpretive purposes. These broad groups and the soil associations are described on the following pages.

### Mainly Excessively Drained, Nearly Level to Strongly Sloping Soils of the Uplands

Most of the soils in the two associations of this group are sandy to a depth of 80 inches or more. On a small acreage they are loamy at a depth of 40 to 80 inches. These associations are predominantly in the southern part of the survey area. Smaller areas are in the northeastern part.

### 1. *Astatula association*

*Nearly level to strongly sloping, excessively drained soils, sandy to a depth of more than 80 inches*

The landscape of this association is one of undulating sandhills and a few small grassy ponds. There are only four areas of this association. The most extensive one is in the southern part of the survey area west of Interstate Highway 75. It extends north from the county line for about 8 miles and in most places is less than 2 miles wide. Three smaller, isolated areas are about 3 and 12 miles southwest of Ocala and 2 miles northwest of Candler.

The soils are deep, droughty sands more than 80 inches thick. In places the sand is more than 120 inches thick. Slopes are mostly 2 to 8 percent, but range from 0 to 12. The natural vegetation is chiefly sand pine, bluejack oak, and sand live oak and a sparse understory of rosemary, pineland three-awn, and palmetto. Around the edges of some of the small ponds is scattered slash pine, longleaf pine, and palmetto. Wetland grasses and sedges are in the ponds.

This association makes up about 1 percent, or 6,960 acres, of the survey area. It is about 94 percent Astatula soils and 6 percent Adamsville, Candler, Electra, Pompano, and Tavares soils.

Astatula soils are excessively drained. They commonly have a 1-inch covering of leaves, roots, pine needles, twigs, and partly decomposed organic matter at the surface. Typically, the surface layer is gray sand and the underlying material is yellowish brown and very pale brown sand.

Most of this association is still in natural vegetation. Some areas have been cleared and are under residential and urban development. The soils are too droughty and too low in fertility to be suited to cultivated crops. They are of only limited use for improved pasture and citrus. If left in woodland, they provide protection for wildlife but only a limited supply of food.

### 2. *Candler-Apopka association*

*Nearly level to strongly sloping, excessively drained and well drained sandy soils, some with thin sandy loam lamellae at a depth of 60 to 80 inches and others loamy at a depth of 40 to 80 inches*

The landscape of this association is one of broad, rolling sandhills and swamps, small ponds, and a few sand-bottom lakes. The lakes are mostly less than 10 acres in size, but those in the southeastern part of the survey area range from about 2 to more than 40 acres. Most of the association is in the southeastern and southwestern parts of the survey area. A large area in the southeastern part, however, extends north to within 5 miles of the Alachua County line. This area occurs as a strip, about 2 miles wide, just east of Ocala. Smaller areas of the association are around Citra and Orange Springs.

This association generally occurs as broad, nearly level to sloping, deep sandy areas intermixed with small areas of steeper, sharp-breaking slopes. The natural vegetation is turkey oak, bluejack oak, post oak, and scattered longleaf pine (fig. 1) and an understory of pineland three-awn and lichens. In the more poorly drained areas, it is slash pine, longleaf pine, gallberry, and oak. In the swamps, it is mostly bay, gum, cypress, and water-tolerant grasses and sedges.

This association makes up about 29 percent, or 201,720 acres, of the survey area. It is about 77 percent Candler soils, 8 percent Apopka soils, and 15 percent Adamsville, Astatula, Pomona, Pompano, and Tavares soils.

Candler soils are excessively drained. Typically, the surface layer is dark gray sand. Below this to a depth of about 67 inches is yellow sand. Very pale brown sand that has thin bands of yellowish brown loamy sand is between depths of 67 and 109 inches.

Apopka soils are well drained. Typically, the surface layer is yellow sand about 49 inches thick. The subsoil is mostly yellowish red sandy clay loam.

Most of this association is still in natural vegetation. A few large areas are under residential and urban development. The rest is dominantly in citrus or improved pasture. Nearly all the citrus groves in the southeastern part of the survey area are in this association. The soils are fairly well suited to some locally grown crops. They are moderately well suited to improved pasture. If wooded, they provide protection and a fair supply of food for wildlife.

## Well Drained, Nearly Level to Sloping Soils of the Uplands

Most of the soils in the two associations of this group are sandy in the upper 20 to 80 inches and loamy below. Some are sandy throughout, and a few are sandy to a depth of less than 20 inches and clayey below. These associations are mostly in the central part of the survey area, extending from Sumter County in the south to Alachua County in the north. Some areas are in the western part, mostly around Martel and Romeo.

### 3. *Arredondo-Gainesville association*

*Nearly level to sloping, well drained soils, some sandy to a depth of more than 40 inches and loamy below and others sandy throughout*

The landscape of this association is one of rolling uplands interspersed with a few small sinkholes and other depressions and small somewhat poorly drained and poorly drained areas. A few isolated spots are ponded.

This association occurs dominantly within the central part of the survey area, extending from Alachua County in the north to Sumter County in the south. A few areas occur in the western part, mostly around Martel and Romeo and along the Levy County line. In four small areas, limestone is about 6 to 63 inches below the surface and numerous outcrops of limestone boulders are on the surface. The two largest of these areas are along the Levy County line in the north-

TABLE 1.—LIMITATIONS FOR SELECTED

| Name of association, percentage, and component soils | Percent of association | Degree and kind of limitation for— | | | | |
|---|---|---|---|---|---|---|
| | | Sanitary facilities | | | | |
| | | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Shallow excavations |
| 1. Astatula (1 percent) | -- | Slight | Severe | Severe | Severe | Severe |
| Astatula | 94 | Slight[2] | Severe: seepage. | Severe: seepage, too sandy. | Severe: seepage. | Severe: cutbanks cave. |
| Minor soils | 6 | | | | | |
| 2. Candler-Apopka (29 percent) | -- | Slight | Severe | Severe | Severe | Severe |
| Candler | 77 | Slight | Severe: seepage. | Severe: seepage, too sandy. | Severe: seepage. | Severe: cutbanks cave. |
| Apopka | 8 | Slight | Severe: seepage. | Severe: too sandy. | Slight | Severe: cutbanks cave. |
| Minor soils | 15 | | | | | |
| 3. Arredondo-Gainesville (16 percent) | -- | Slight | Severe | Severe | Severe | Severe |
| Arredondo | 71 | Slight | Severe: seepage. | Severe: seepage, too sandy. | Severe: seepage. | Severe: cutbanks cave. |
| Gainesville | 6 | Slight | Severe: seepage. | Severe: seepage. | Severe: seepage. | Severe: cutbanks cave. |
| Minor soils | 23 | | | | | |
| 4. Kendrick-Hague-Zuber (9 percent) | -- | Slight | Moderate | Slight | Slight | Slight |
| Kendrick | 52 | Slight | Moderate: seepage. | Slight | Slight | Slight |
| Hague | 17 | Slight | Moderate: seepage. | Slight | Slight | Slight |
| Zuber | 13 | Severe: percs slowly | Moderate: slope. | Moderate: too clayey. | Slight | Moderate: too clayey. |
| Minor soils | 18 | | | | | |
| 5. Sparr-Lochloosa-Tavares (9 percent) | -- | Moderate | Severe | Severe | Moderate | Severe |
| Sparr | 44 | Moderate: wetness. | Severe: wetness. | Severe: wetness. | Moderate: wetness. | Severe: cutbanks cave. |
| Lochloosa | 18 | Severe: wetness. | Severe: wetness. | Severe: wetness. | Moderate: wetness. | Severe: wetness, cutbanks cave. |
| Tavares | 14 | Moderate: wetness. | Severe: seepage. | Severe: wetness, seepage. | Severe: seepage. | Severe: cutbanks cave. |
| Minor soils | 24 | | | | | |
| 6. Lynne-Pomona-Pompano (9 percent) | -- | Severe | Severe | Severe | Severe | Severe |
| Lynne | 32 | Severe: wetness, percs slowly. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: cutbanks cave, wetness. |
| Pomona | 30 | Severe: wetness. | Severe: wetness. | Severe: wetness, too sandy. | Severe: wetness. | Severe: wetness, cutbanks cave. |
| Pompano | 10 | Severe: wetness. | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, cutbanks cave. |
| Minor soils | 28 | | | | | |
| 7. Eureka-Paisley-Eaton (7 percent) | -- | Severe | Severe | Severe | Severe | Severe |
| Eureka | 40 | Severe: percs slowly, wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |

## USES, BY SOIL ASSOCIATIONS

| Degree and kind of limitation for—Continued | | | | | | | |
|---|---|---|---|---|---|---|---|
| Building site development | | | | Recreational development | | | |
| Dwellings without basements | Dwellings with basements | Small commercial buildings [1] | Local roads and streets | Camp areas | Picnic areas | Playgrounds | Paths and trails |
| Slight | Slight | Slight | Slight | Severe | Severe | Severe | Severe. |
| Slight | Slight | Slight | Slight | Severe: too sandy. | Severe: too sandy. | Severe: too sandy. | Severe: too sandy. |
| Slight | Slight | Slight | Slight | Slight | Severe | Severe | Severe. |
| Slight | Slight | Slight [3] | Slight | Severe: too sandy. | Severe: too sandy. | Severe: too sandy. | Severe: too sandy. |
| Slight | Slight | Slight [3] | Slight | Moderate: too sandy. | Moderate: too sandy. | Severe: too sandy. | Moderate: too sandy. |
| Slight | Slight | Slight | Slight | Moderate | Moderate | Severe | Moderate. |
| Slight | Slight | Slight [3] | Slight | Moderate: too sandy. | Moderate: too sandy. | Severe: too sandy. | Moderate: too sandy. |
| Slight | Slight | Slight [3] | Slight | Moderate: too sandy. | Moderate: too sandy. | Moderate: too sandy, slope. | Moderate: too sandy. |
| Slight | Slight | Slight | Moderate | Moderate | Moderate | Moderate | Moderate. |
| Slight | Slight | Slight [3] | Moderate: low strength. | Moderate: too sandy. | Moderate: too sandy. | Moderate: [4] too sandy, slope. | Moderate: too sandy. |
| Slight | Slight | Slight [3] | Slight | Moderate: too sandy, | Moderate: too sandy. | Severe: too sandy. | Moderate: too sandy. |
| Moderate: shrink-swell, low strength. | Moderate: shrink-swell, low strength. | Moderate: shrink-swell, slope, low strength. | Severe: low strength. | Slight | Slight | Moderate: [4] slope. | Slight. |
| Moderate | Severe | Moderate | Moderate | Moderate | Moderate | Severe | Moderate. |
| Moderate: wetness. | Severe: wetness. | Moderate: wetness. | Moderate: wetness. | Moderate: too sandy. | Moderate: too sandy. | Severe: too sandy. | Moderate: too sandy. |
| Moderate: wetness, low strength. | Moderate: wetness, low strength. | Moderate: wetness, low strength. | Moderate: wetness, low strength. | Moderate: too sandy, wetness. | Moderate: too sandy. wetness. | Severe: too sandy, wetness. | Moderate: too sandy, wetness. |
| Slight | Moderate: wetness. | Slight | Slight | Moderate: too sandy. | Moderate: too sandy. | Severe: too sandy. | Moderate: too sandy. |
| Severe | Severe | Severe | Severe | Severe | Severe | Severe | Severe. |
| Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: low strength, wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness, too sandy. | Severe: wetness. |
| Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness, | Severe: wetness. | Severe: wetness. | Severe: wetness, too sandy. | Severe: wetness. |
| Severe: wetness. | Severe: wetness. | Severe: wetness, corrosive. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness, too sandy. | Severe: wetness. |
| Severe | Severe | Severe | Severe | Severe | Severe | Severe | Severe. |
| Severe: shrink-swell, low strength, wetness. | Severe: shrink-swell, low strength, wetness. | Severe: shrink-swell, low strength, wetness. | Severe: shrink-swell, low strength, wetness. | Severe: percs slowly, wetness. | Severe: wetness. | Severe: percs slowly, wetness. | Severe: wetness. |

### TABLE 1.—LIMITATIONS FOR SELECTED

| Name of association, percentage, and component soils | Percent of association | Degree and kind of limitation for— | | | | |
|---|---|---|---|---|---|---|
| | | Sanitary facilities | | | | |
| | | Septic tank absorption fields | Sewage lagoon areas | Trench sanitary landfill | Area sanitary landfill | Shallow excavations |
| Paisley | 23 | Severe: percs slowly, wetness. | Severe: wetness. | Severe: wetness, too clayey. | Severe: wetness. | Severe: wetness, too clayey. |
| Eaton | 10 | Severe: percs slowly, wetness. | Severe: wetness. | Severe: wetness, too sandy. | Severe: wetness. | Severe: wetness, cutbanks cave. |
| Minor soils | 27 | | | | | |
| 8. Blichton-Flemington-Kanapaha (15 percent) | -- | Severe | Severe | Severe | Severe | Severe |
| Blichton | 33 | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| Flemington | 24 | Severe: wetness, percs slowly. | Moderate: slope. | Severe: wetness, too clayey. | Severe: wetness. | Severe: wetness, too clayey. |
| Kanapaha | 8 | Severe: wetness. | Severe: wetness, slope. | Severe: wetness, too sandy. | Severe: wetness. | Severe: cutbanks cave, wetness. |
| Minor soils | 35 | | | | | |
| 9. Bluff-Martel (1 percent) | -- | Severe | Severe | Severe | Severe | Severe |
| Bluff | 40 | Severe: percs slowly, wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. |
| Martel | 30 | Severe: percs slowly, wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness, too clayey. |
| Minor soils | 30 | | | | | |
| 10. Okeechobee-Terra Ceia-Tomoka (4 percent) | -- | Severe | Severe | Severe | Severe | Severe |
| Okeechobee | 26 | Severe: wetness. | Severe: wetness, excess humus, seepage. | Severe: wetness, excess humus, seepage. | Severe: wetness, seepage. | Severe: wetness, excess humus. |
| Terra Ceia | 26 | Severe: wetness. | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage. | Severe: wetness, excess humus. |
| Tomoka | 9 | Severe: wetness. | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage. | Severe: wetness, excess humus, cutbanks cave. |
| Minor soils | 39 | | | | | |

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[1] Foundation requirements do not exceed those of ordinary three-story dwellings.

[2] Because of very rapid permeability, pollution is a possible hazard to nearby lakes, ponds, streams, and other water supplies.

western part of the survey area, one about 3 miles northeast of the intersection of State Roads 200 and 484 and the other north of Citra.

This association is mostly well drained. It is dominantly nearly level and gently sloping, but a few areas break sharply for short distances. The small depressions, which are at the base of slopes, are commonly well drained and have a surface layer of sandy colluvium. The natural vegetation is longleaf pine, slash pine, live oak, water oak, laurel oak, magnolia, and dogwood. In the more poorly drained areas, it is chiefly a growth of slash pine, loblolly pine, oak, sweetgum, and waxmyrtle.

This association makes up about 16 percent, or 111,290 acres, of the survey area. It is about 71 percent Arredondo soils, 6 percent Gainesville soils, and 23 percent Apopka, Candler, Hague, Kanapaha, Kendrick, Pedro, and Sparr soils.

USES, BY SOIL ASSOCIATIONS—Continued

| Degree and kind of limitation for—Continued | | | | | | | |
|---|---|---|---|---|---|---|---|
| Building site development | | | | Recreational development | | | |
| Dwellings without basements | Dwellings with basements | Small commercial buildings[1] | Local roads and streets | Camp areas | Picnic areas | Playgrounds | Paths and trails |
| Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: percs slowly, wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| Severe: wetness. | Severe: wetness, low strength. | Severe: wetness, low strength. | Severe: wetness, low strength. | Severe: wetness, percs slowly. | Severe: wetness. | Severe: wetness, too sandy. | Severe: wetness. |
| Severe | Severe | Severe | Severe | Severe | Severe | Severe | Severe. |
| Severe: wetness. | Severe: wetness. | Severe: wetness, corrosive. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: shrink-swell, low strength, wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| Severe: wetness. | Severe: wetness. | Severe: wetness. | Severe: wetness. | Moderate: too sandy. | Moderate: too sandy. | Severe: too sandy, slope. | Moderate: too sandy. |
| Severe | Severe | Severe | Severe | Severe | Severe | Severe | Severe. |
| Severe: wetness, floods, shrink-swell. | Severe: wetness, floods, shrink-swell. | Severe: wetness, floods, shrink-swell | Severe: wetness, floods, shrink-swell, low strength. | Severe: wetness, floods, percs solwly. | Severe: wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. |
| Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, percs slowly. | Severe: wetness. | Severe: wetness. | Severe: wetness. |
| Severe | Severe | Severe | Severe | Severe | Severe | Severe | Severe. |
| Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength, corrosive. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |

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[3] Moderate if slope is 4 to 8 percent

[4] Severe if slope is 6 to 8 percent.

Arredondo soils are well drained. Typically, the surface layer is dark grayish brown sand. It is underlain, to a depth of about 65 inches, by yellowish brown and strong brown sand. Below this is strong brown loamy sand and fine sandy loam.

Gainesville soils are well drained. Typically, the surface layer is very dark grayish brown and dark brown loamy sand. The underlying material to a depth of more than 80 inches is brown and strong brown loamy sand.

Most of this association is in crops or improved pasture. A large part is still in natural vegetation. Some areas have been subdivided and are under residential and urban development. A few are in citrus. Wooded areas provide protection and a fair supply of food for wildlife.

TABLE 2.—SOURCES OF CONSTRUCTION MATERIAL

| Name of association, percentage, and component soils | Percent of association | Suitability as a source of— Road fill | Sand | Topsoil |
|---|---|---|---|---|
| 1. Astatula (1 percent) | -- | Good | Good | Poor |
| Astatula | 94 | Good | Good | Poor: too sandy |
| Minor soils | 6 | | | |
| 2. Candler-Apopka (29 percent) | -- | Good | Good | Poor |
| Candler | 77 | Good | Good | Poor: too sandy |
| Apopka | 8 | Good | Good | Poor: too sandy |
| Minor soils | 15 | | | |
| 3. Arredondo-Gainesville (16 percent) | -- | Good | Fair | Poor |
| Arredondo | 71 | Good | Fair: excess fines | Poor: too sandy |
| Gainesville | 6 | Good | Poor: excess fines | Poor: too sandy |
| Minor soils | 23 | | | |
| 4. Kendrick-Hague-Zuber (9 percent) | -- | Fair | Unsuited | Poor |
| Kendrick | 52 | Fair: low strength | Unsuited: excess fines. | Poor: too sandy |
| Hague | 17 | Good | Unsuited: excess fines. | Poor: too sandy |
| Zuber | 13 | Poor: low strength. | Unsuited: excess fines. | Poor: too sandy |
| Minor soils | 18 | | | |
| 5. Sparr-Lochloosa-Tavares (9 percent) | -- | Good | Fair | Poor |
| Sparr | 44 | Good | Fair: excess fines | Poor: too sandy |
| Lochloosa | 18 | Fair: low strength. | Unsuited: excess fines. | Poor: too sandy |
| Tavares | 14 | Good | Good | Poor: too sandy |
| Minor soils | 24 | | | |
| 6. Lynne-Pomona-Pompano (9 percent) | -- | Poor | Fair | Poor |
| Lynne | 32 | Poor: low strength. | Fair: excess fines | Poor: too sandy, wetness. |
| Pomona | 30 | Good | Fair: excess fines | Poor: too sandy, wetness. |
| Pompano | 10 | Poor: wetness | Good | Poor: too sandy, wetness. |
| Minor soils | 28 | | | |
| 7. Eureka-Paisley-Eaton (7 percent) | -- | Poor | Unsuited | Poor |
| Eureka | 40 | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines. | Poor: wetness, too sandy. |
| Paisley | 23 | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines. | Poor: wetness, too sandy, thin layer. |
| Eaton | 10 | Poor: wetness, low strength. | Unsuited: excess fines. | Poor: wetness, too sandy. |
| Minor soils | 27 | | | |

AND WATER MANAGEMENT, BY SOIL ASSOCIATIONS

| Suitability as a source of—Continued | Water management | | | | |
|---|---|---|---|---|---|
| | Limitations for— | | | Features affecting— | |
| Daily cover for landfill | Pond reservoir areas | Aquifer-fed excavated ponds | Embankments, dikes, and levees | Drainage | Irrigation |
| Poor | Severe | Severe | Severe | Not needed | Seepage, droughty, fast intake. |
| Poor: too sandy, seepage. | Severe: seepage | Severe: no water | Severe: seepage, unstable fill, piping. | Not needed | Seepage, droughty, fast intake. |
| Poor | Severe | Severe | Severe | Not needed | Percs rapidly, droughty, fast intake. |
| Poor: too sandy, seepage. | Severe: seepage | Severe: no water | Severe: seepage, piping, unstable fill. | Not needed | Seepage, droughty, fast intake. |
| Poor: too sandy, seepage. | Severe: seepage | Severe: no water | Severe: seepage, piping, unstable fill. | Not needed | Seepage, fast intake. |
| Poor | Severe | Severe | Severe | Not needed | Droughty, fast intake. |
| Poor: too sandy, seepage. | Severe: seepage | Severe: no water | Severe: seepage, piping. | Not needed | Droughty, fast intake. |
| Fair: too sandy, seepage. | Severe: seepage | Severe: no water | Moderate: seepage, piping. | Not needed | Fast intake, seepage. |
| Good | Moderate | Severe | Slight | Not needed | Favorable. |
| Good | Moderate: seepage. | Severe: no water | Slight | Not needed | Favorable. |
| Good | Severe: seepage | Severe: no water | Moderate: piping | Not needed | Fast intake, slope. |
| Fair: too clayey | Moderate: seepage. | Severe: no water | Moderate: low strength. | Not needed | Favorable. |
| Poor | Moderate | Severe | Moderate | Cutbanks cave | Seepage, fast intake. |
| Poor: too sandy, seepage. | Moderate: seepage. | Severe: deep to water. | Moderate: piping, unstable fill. | Cutbanks cave | Seepage, fast intake. |
| Good | Moderate: seepage. | Moderate: deep to water. | Slight | Cutbanks cave, wetness. | Wetness. |
| Poor: too sandy, seepage. | Severe: seepage | Severe: deep to water. | Severe: unstable fill, piping. | Cutbanks cave | Seepage. |
| Poor | Slight | Slight | Severe | Cutbanks cave, wetness. | Wetness. |
| Poor: too sandy, wetness. | Slight | Slight | Moderate: unstable fill. | Cutbanks cave, percs slowly, wetness. | Wetness. |
| Poor: too sandy, wetness. | Moderate: seepage. | Slight | Severe: piping, unstable fill. | Cutbanks cave, wetness. | Wetness, fast intake. |
| Poor: too sandy, wetness, seepage. | Severe: seepage | Slight | Severe: seepage, piping. | Cutbanks cave, wetness. | Wetness. |
| Poor | Slight | Slight | Moderate | Percs slowly, wetness. | Wetness, percs slowly. |
| Poor: too clayey, hard to pack, wetness. | Slight | Slight | Moderate: unstable fill, shrink-swell. | Percs slowly, wetness. | Wetness, percs slowly. |
| Poor: too clayey, hard to pack, wetness. | Slight | Slight | Severe: shrink-swell, low strength, hard to pack. | Percs slowly, wetness. | Wetness, percs slowly. |
| Poor: wetness | Slight | Moderate: deep to water. | Slight | Percs slowly, wetness. | Wetness. |

TABLE 2.—SOURCES OF CONSTRUCTION MATERIAL

| Name of association, percentage, and component soils | Percent of association | Suitability as a source of— | | |
|---|---|---|---|---|
| | | Road fill | Sand | Topsoil |
| 8. Blichton-Flemington-Kanapaha (15 percent) | -- | Poor | Unsuited | Poor |
| Blichton | 33 | Poor: wetness | Unsuited: excess fines. | Poor: wetness, too sandy. |
| Flemington | 24 | Poor: wetness, low strength, shrink-swell. | Unsuited: excess fines. | Poor: wetness, thin layer. |
| Kanapaha | 8 | Good | Fair: excess fines | Poor: too sandy, wetness. |
| Minor soils | 35 | | | |
| 9. Bluff-Martel (1 percent) | -- | Poor | Unsuited | Poor |
| Bluff | 40 | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines. | Poor: too clayey, wetness. |
| Martel | 30 | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines. | Poor: wetness |
| Minor soils | 30 | | | |
| 10. Okeechobee-Terra Ceia-Tomoka (4 percent) | -- | Poor | Unsuited | Poor |
| Okeechobee | 26 | Poor: wetness, excess humus, low strength. | Unsuited: excess humus. | Poor: wetness |
| Terra Ceia | 26 | Poor: wetness, excess humus, low strength. | Unsuited: excess humus. | Poor: wetness |
| Tomoka | 9 | Poor: wetness, excess humus, low strength. | Unsuited: excess humus. | Poor: wetness |
| Minor soils | 39 | | | |

### 4. *Kendrick-Hague-Zuber association*

*Nearly level to sloping, well drained soils, sandy to a depth of less than 40 inches and loamy or clayey below*

The landscape of this association is one of rolling areas of gentle slopes intermixed with small, sharp-breaking slopes and long, narrow hillsides. Most areas are interspersed with small sinkholes. This association occurs as small areas almost entirely within a tract 9 miles wide that extends in a north-south direction the entire length of the county, from Orange Lake to Summerfield. One area is in the west-central part, southwest of Martel.

The soils are influenced by underlying phosphatic material. They are mostly gently sloping and well drained. In some spots they are poorly drained and somewhat poorly drained. All are commonly intermixed along slopes and at the base of slopes.

The natural vegetation is chiefly slash pine, longleaf pine, loblolly pine, oak, hickory, magnolia, dogwood, and sweetgum. In the poorly drained areas, it is commonly a pine-hardwood mixture and an understory of waxmyrtle and other native grasses and sedges.

This association makes up about 9 percent, or 62,600 acres, of the survey area. It is about 52 percent Kendrick soils, 17 percent Hague soils, 13 percent Zuber soils, and 18 percent Arredondo, Blichton, Lochloosa, Micanopy, Kanapaha, and Sparr soils.

Kendrick soils are well drained. Typically, the surface layer is dark grayish brown loamy sand and the subsurface layer is yellowish brown loamy sand. The subsoil from a depth of about 26 to more than 60 inches is yellowish brown sandy clay loam.

Hague soils are well drained. Typically, the sandy surface layer is dark grayish brown and the sandy subsurface layer is light yellowish brown and reddish yellow. The upper 25 inches of the subsoil is strong brown and yellowish red sandy loam and sandy clay loam, and the lower 25 inches is strong brown loamy sand.

AND WATER MANAGEMENT, BY SOIL ASSOCIATIONS—Continued

| Suitability as a source of—Continued | Water management | | | | |
|---|---|---|---|---|---|
| | Limitations for— | | | Features affecting— | |
| Daily cover for landfill | Pond reservoir areas | Aquifer-fed excavated ponds | Embankments, dikes, and levees | Drainage | Irrigation |
| Poor | Moderate | Moderate | Slight | Wetness | Wetness. |
| Poor: wetness, area reclaim. | Moderate: seepage. | Moderate: deep to water. | Slight | Wetness | Wetness. |
| Poor: wetness, too clayey. | Slight | Severe: slow refill | Moderate: unstable fill, compressible, hard to pack. | Percs slowly, wetness. | Wetness, percs slowly. |
| Poor: wetness, too sandy, seepage. | Slight | Moderate: deep to water, slow refill. | Severe: piping | Cutbanks cave | Fast intake, wetness. |
| Poor | Slight | Slight | Moderate | Percs slowly, wetness. | Percs slowly, wetness. |
| Poor: wetness, too clayey. | Slight | Slight | Moderate: shrink-swell. | Percs slowly, wetness. | Percs slowly, wetness. |
| Poor: wetness, too clayey. | Slight | Slight | Moderate: unstable fill, shrink-swell, compressible. | Percs slowly, wetness, poor outlets. | Percs slowly, wetness. |
| Poor | Severe | Slight | Severe | Wetness, excess humus. | Wetness. |
| Poor: wetness, excess humus. | Severe: excess humus, seepage. | Slight | Severe: excess humus, piping, seepage. | Wetness, excess humus. | Wetness. |
| Poor: wetness, excess humus. | Severe: excess humus, seepage. | Slight | Severe: excess humus, piping, seepage. | Wetness, excess humus. | Wetness. |
| Poor: wetness, excess humus, seepage. | Severe: excess humus, seepage. | Slight | Severe: compressible, low strength, piping. | Wetness, poor outlets, excess humus. | Wetness. |

Zuber soils are well drained. Typically, the surface layer is dark grayish brown loamy sand. Below this is yellowish brown loamy sand. The upper 5 inches of the subsoil is dark yellowish brown sandy clay loam, and the lower 57 inches is dark yellowish brown and yellowish brown sandy clay and clay.

Most of this association is in crops or improved pasture. The rest is dominantly in natural vegetation or is under urban development. A few areas are in citrus. Wooded areas provide a good supply of food and good protection for wildlife, especially birds and small animals.

## Somewhat Poorly Drained and Moderately Well Drained, Nearly Level to Sloping Soils of the Uplands and Flatwoods

The soils in the only soil association of this group are dominantly sandy to a depth of less than 80 inches and loamy below. Some are sandy to a depth of more than 80 inches, and some are sandy to a depth of less than 20 inches and have a clayey subsoil. This association occurs throughout the survey area.

### 5. *Sparr-Lochloosa-Tavares association*

*Nearly level to sloping, somewhat poorly drained and moderately well drained soils, some sandy to a depth of 20 to more than 40 inches and loamy below and others sandy throughout*

This association is on uplands and flatwoods. In the uplands, in the central and western parts of the survey area, it is commonly interspersed with small sinkholes and in the flatwoods with wet spots and grassy ponds. In the nearly level and gently sloping uplands are some sharp-breaking slopes of somewhat poorly drained soils. The wetness in these sloping parts is the result of hillside seepage. This association occurs as small areas mostly throughout the central part of the survey area and around Citra, Fort McCoy, and Orange

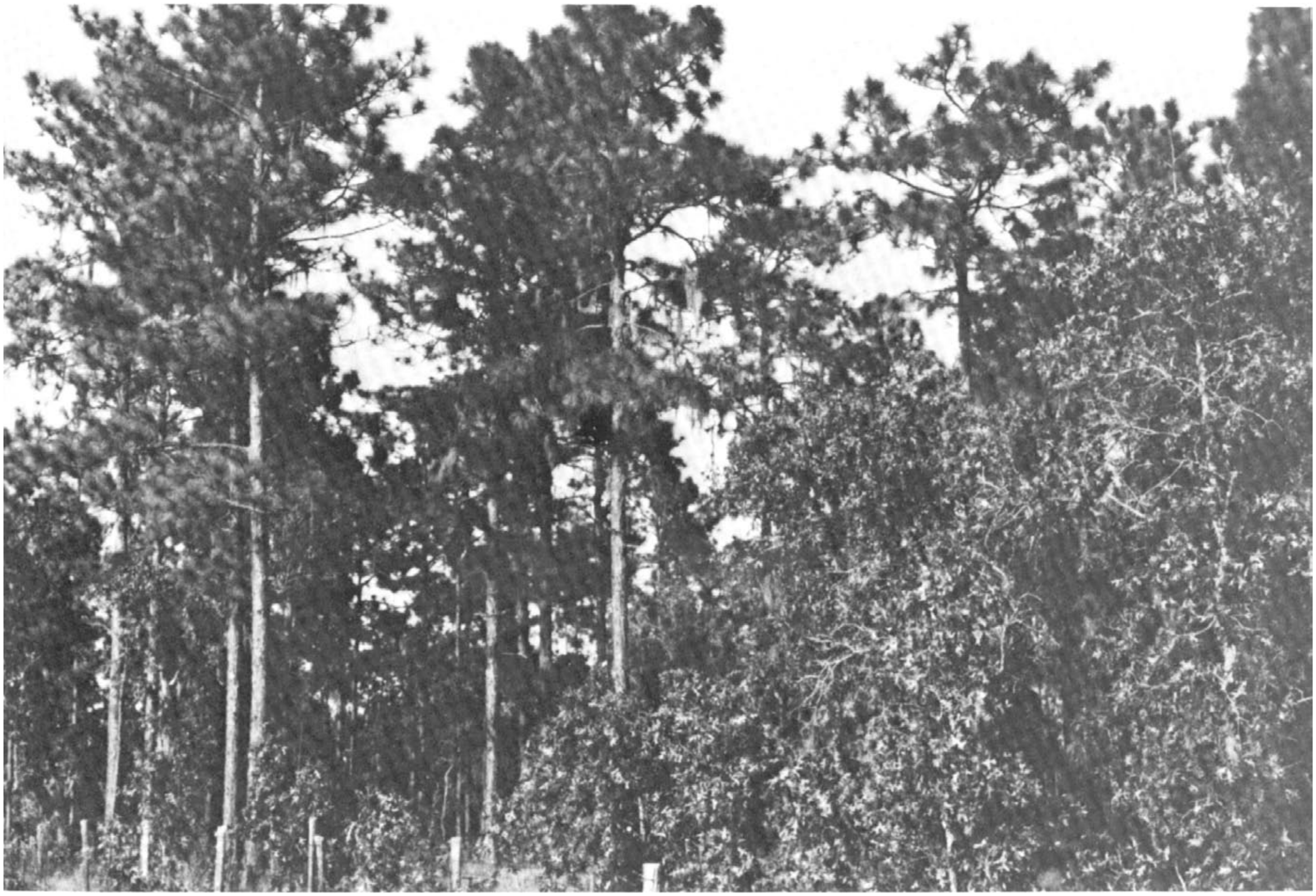

*Figure 1.*—Turkey oak, bluejack oak, post oak, and longleaf pine on Candler sand, 0 to 5 percent slopes. This plant cover is typical of the Candler-Apopka association.

Springs in the northeast. The largest area is in the southwest.

The natural vegetation is chiefly slash pine, longleaf pine, live oak, water oak, post oak, dogwood, and sweetgum and an understory of waxmyrtle, briers, sedges, and grasses. In poorly drained areas it is pine, gum, waxmyrtle, palmetto, gallberry, and native grasses. In the small ponded areas, it is commonly water-tolerant grasses.

This association makes up about 9 percent, or 62,600 acres, of the survey area. It is about 44 percent Sparr soils, 18 percent Lochloosa soils, 14 percent Tavares soils, and 24 percent Micanopy, Adamsville, Arredondo, Blichton, Kendrick, Lynne, and Pompano soils. Of the less extensive soils, Micanopy soils are dominant.

Sparr soils are somewhat poorly drained. Typically, the surface layer is dark gray fine sand. Below this, to a depth of 48 inches, is very pale brown and yellowish brown fine sand. The upper 12 inches of the subsoil is yellowish brown sandy loam, the next 16 inches is gray sandy clay, and the lower 27 inches is gray sandy clay loam.

Lochloosa soils are somewhat poorly drained. Typically, the surface layer is dark gray fine sand. The subsurface layer is very pale brown and pale brown fine sand. The upper 7 inches of the subsoil is yellowish brown fine sandy loam and sandy clay loam, and the lower 34 inches is gray sandy clay loam and sandy clay.

Tavares soils are moderately well drained. Typically, the surface layer is dark gray and gray sand. The underlying material to a depth of 80 inches or more is pale brown, very pale brown, light gray, and white sand.

Most of this association is still in natural vegetation. In the central part of the survey area, however, much of it is in crops or improved pasture. A few areas are under residential and urban development. A small acreage is in citrus. Wooded areas provide protection and a fair supply of food for many kinds of wildlife.

## Poorly Drained, Nearly Level Soils of the Flatwoods

In the two associations of this group are sandy soils interspersed with ponds and swamps. Some are sandy in the upper layers, are weakly cemented within a depth of 30 inches, and are loamy or clayey in the lower layers. Some have sandy layers less than 40 inches deep over a clayey subsoil. The ponds and swamps are mostly sandy throughout, but some are sandy to a depth of 20 to 40 inches and loamy or clayey below. These associations are mostly in the northeastern part of the survey area, but occur in all of the flatwoods to some extent.

### *6. Lynne-Pomona-Pompano association*

*Nearly level, poorly drained soils, some sandy to a depth of 22 to 80 inches, weakly cemented within a depth of 30 inches, and loamy and clayey in the lower layers and others sandy throughout*

The landscape of this association is one of nearly level pine and palmetto flatwoods interspersed with cypress ponds, swamps, and small, grassy, wet depressions. Some of the ponded areas are connected by narrow, wet drainageways. This association is most extensive in the northeast, around Orange Springs and Fort McCoy. Other areas are along the Withlacoochee River in the southwest. A few small areas are in the northwest.

In the broad, poorly drained areas, the natural vegetation is longleaf pine, slash pine, palmetto, waxmyrtle, gallberry, runner oak, and native grasses. In the very poorly drained depressions, it is water-tolerant grasses. In the ponds and swamps, it is chiefly cypress, bay, and gum.

This association makes up about 9 percent, or 62,600 acres, of the survey area. It is about 32 percent Lynne soils, 30 percent Pomona soils, 10 percent Pompano soils, and 28 percent Adamsville, Eaton, Electra, Eureka, Jumper, Holopaw, and Placid soils.

Lynne soils are poorly drained. Typically, the surface layer is very dark gray sand. The subsurface layer is light brownish gray and light gray sand. Between depths of 20 and 31 inches is black and mixed black and dark reddish brown, weakly cemented loamy sand. Below this is gray sandy clay loam and sandy clay.

Pomona soils are poorly drained. Typically, the surface layer is very dark gray sand. The subsurface layer is gray and light gray sand. Between depths of 26 to 39 inches is dark colored, weakly cemented sand. Next, to a depth of 51 inches, is brown sand. Below this is gray sandy clay loam and light sandy clay.

Pompano soils are poorly drained. They are sand to a depth of more than 80 inches. Typically, the surface layer is very dark gray to black and the underlying material is gray to white.

Most of this association is still in natural vegetation. A small acreage is in improved pasture. A few small areas are used for gardens. Undeveloped areas provide habitat for many kinds of native birds and animals.

### *7. Eureka-Paisley-Eaton association*

*Nearly level, poorly drained soils, sandy to a depth of 5 to 40 inches and clayey below*

The landscape of this association is one of broad, nearly level flatwoods intermixed with small ponds and scattered depressions. Some of the depressions are isolated, and others are connected by narrow drainageways. Most of this association is in the east-central part of the survey area. The largest area is east of Silver Springs and extends in a north-south direction along State Road 315 to northwest of Fort McCoy. Two small areas are in the extreme southwestern part of the survey area along the Withlacoochee River.

The natural vegetation is chiefly slash pine, loblolly pine, and palm, but in some areas is a hardwood growth of swamp white oak, gum, maple, and magnolia. The understory is waxmyrtle, bluestem, palmetto, briers, gallberry, and native grasses. The vegetation in the ponded areas is dominantly cypress and some gum and pond pine.

This association makes up about 7 percent, or 48,690 acres, of the survey area. It is about 40 percent Eureka soils, 23 percent Paisley soils, 10 percent Eaton soils, and 27 percent Bluff, Holopaw, Lynne, Martel, and Pamlico soils and the Martel variant.

Eureka soils are poorly drained. Typically, the surface layer is very dark gray loamy fine sand. The subsurface layer is grayish brown loamy fine sand. The subsoil is gray sandy clay.

Paisley soils are poorly drained. Typically, the surface layer is very dark gray loamy fine sand. The subsurface layer is grayish brown loamy fine sand. The subsoil is dark gray and gray sandy clay that contains some carbonatic material below a depth of about 45 inches.

Eaton soils are poorly drained. Typically, the surface layer is dark gray loamy sand. The subsurface layer is gray loamy sand. The subsoil is gray sandy clay loam and sandy clay.

Most of this association is still in natural vegetation. Most of the cleared areas are in improved pasture, but a few small areas are used for vegetables. Many kinds of native birds and animals live on the broad expanses of this association, and these undeveloped areas provide food and good protection for wildlife.

## Poorly Drained, Nearly Level to Strongly Sloping Soils of the Uplands

The one association in this group consists of soils of the rolling uplands. Some soils are sandy to a depth of less than 40 inches and have a loamy or clayey subsoil. Others are sandy to a depth of 40 to 80 inches and loamy below. Most of this association is in the northwestern part of the survey area.

### *8. Blichton-Flemington-Kanapaha association*

*Nearly level to strongly sloping, poorly drained soils, sandy to a depth of less than 20 to more than 40 inches and loamy or clayey below*

The landscape of this association is one of upland slopes, some of which are sharp breaking and wet and others long and seepy. All are interspersed with sinkholes. Wetness is the result of hillside seepage. In many areas the nearly level soils at the base of slopes are covered with water because runoff on the slopes is rapid and drainage outlets are lacking. This association occurs as a large area in the northwestern part of the survey area. Scattered areas are in the central part, from McIntosh in the north to Summerfield in the south. Spots of somewhat poorly drained and well drained soils occur along some slopes. Most of these better drained soils are near McIntosh, Ocala, and Summerfield. The natural vegetation is slash pine, loblolly pine, longleaf pine, laurel oak, water oak, sweetgum, hickory, magnolia, and dogwood and an understory of chiefly waxmyrtle, gallberry, and native grasses.

This association makes up about 15 percent, or 104,340 acres, of the survey area. It is about 33 percent Blichton soils, 24 percent Flemington soils, 8 percent Kanapaha soils, and 35 percent Boardman, Fellowship, Kendrick, Lochloosa, Martel, Micanopy, Sparr, and Wacahoota soils. Of the less extensive soils, the sloping and strongly sloping Boardman, Fellowship, and Wacahoota soils on seepy hillsides are dominant.

Blichton soils are poorly drained. Typically, the surface layer is very dark gray sand. The subsurface layer, to a depth of 26 inches, is gray sand. The subsoil is gray sandy loam in the upper 4 inches and dark gray and gray sandy clay loam below.

Flemington soils are poorly drained. Typically, the surface layer is very dark gray loamy sand and the subsurface layer is gray loamy sand. The subsoil, between depths of 9 and 53 inches, is dark gray and gray clay. The underlying material is light gray clay.

Kanapaha soils are poorly drained. Typically, the surface layer is gray fine sand and the subsurface layer is light gray fine sand. The subsoil, between depths of 48 and 82 inches, is gray. The upper 7 inches is sandy loam, the next 15 inches is sandy clay, and the lower 12 inches is sandy clay loam.

Most of this association is still in natural vegetation. Most cleared areas are in improved pasture. Some are in crops and citrus. A few are under residential development, although the major soils have severe limitations for dwellings and small commercial buildings. Wooded areas provide food and good protection for wildlife, especially birds and small animals.

## Very Poorly Drained Soils of the Flatwoods and Flood Plains

In the two soil associations of this group are mineral and organic soils in ponds and swamps. The mineral soils are commonly loamy or clayey throughout. These associations are on the flood plain of the Oklawaha River and Silver Run and in large areas of the very wet flatwoods in the northeast.

### *9. Bluff-Martel association*

*Nearly level, very poorly drained soils, some loamy and clayey throughout and others loamy in the upper part and clayey within a depth of 20 inches*

This association is in ponds and swamps of the flatwoods and on the flood plain of the Oklawaha River and Silver Run. It is usually covered with water or flooded for periods of about 6 months or more during most years. In the flatwoods the ponds and swamps are isolated within broad, poorly drained expanses. They lack a good natural drainage system and have only a few scattered drainageways. Most of this association occurs on the flood plain of the Oklawaha River. One area is in the flatwoods southeast of Citra, another is north of Fort McCoy, and one small area is in the southwest, just north of Sumter County.

The natural vegetation on the flood plain is a swamp hardwood growth of oak, maple, gum, cypress, and palm and a few areas of a mixture of pine and hardwoods. In the flatwoods it is mostly cypress, gum, and water-tolerant grasses.

This association makes up about 1 percent, or 6,961 acres, of the survey area. It is about 40 percent Bluff soils, 30 percent Martel soils, and 30 percent Anclote, Eureka, Paisley, Placid, Terra Ceia, and Tomoka soils. Black Sing Prairie, southeast of Citra, is in this association. On this prairie are mostly Anclote and Placid soils, which are very poorly drained and are sandy throughout.

Bluff soils are very poorly drained. Typically, they have a black and very dark gray sandy clay and sandy clay loam surface layer about 17 inches thick. The subsoil is dark gray and gray sandy clay and sandy clay loam that has pockets of white carbonatic material.

Martel soils are very poorly drained. Typically, the surface layer is black and very dark gray sandy clay loam about 19 inches thick. The subsoil is dark gray and gray sandy clay and clay.

Almost all of this association is still in natural vegetation. Only a small acreage is in improved pasture. The swamps are a natural habitat for many kinds of birds, but protection for many of the small animals is limited by flooding.

### *10. Okeechobee-Terra Ceia-Tomoka association*

*Nearly level, very poorly drained organic soils, some organic to a depth of 52 inches and others organic in the upper 16 to 40 inches and sandy and loamy below*

This association is in marshes and swamps along the Oklawaha River and in large isolated ponds and swamps within the broad flatwoods in the northwest. It is covered with water, except during extended dry periods. It is very poorly drained. The natural vegetation is a swamp hardwood growth of cypress, white bay, red maple, tupelo-gum, and titi or an aquatic plant cover of grasses, sedges, and water hyacinths.

This association makes up about 4 percent, or 27,825 acres, of the survey area. It is about 26 percent Okeechobee soils, 26 percent Terra Ceia soils, 9 percent Tomoka soils, and 39 percent Anclote and Bluff soils and the Pamlico-Martel association. The Pamlico-Martel association is mostly in the flatwoods of the northwestern part of the survey area.

Okeechobee soils are typically black muck to a depth of about 32 inches and very dark brown mucky peat between depths of 32 and 65 inches.

Terra Ceia soils are typically black muck to a depth of about 61 inches and dark reddish brown mucky peat between depths of 61 and 68 inches. The Terra Ceia variant is similar to other Terra Ceia soils, but is extremely acid to strongly acid.

Tomoka soils are typically black muck to a depth of about 32 inches and gray sand and dark gray sandy clay loam below.

Most of this association is still in natural vegetation. One large area long the Oklawaha River in the southeast has been diked, ditched, and cropped. This association is a natural habitat for many kinds of wildlife.

## *Descriptions of the Soils*

This section describes the soil series and mapping units in the Marion County Area. Each soil series is described in detail, and then, briefly, each mapping unit in that series. Unless it is specifically mentioned otherwise, it is to be assumed that what is stated about the soil series holds true for the mapping units in that series. Thus, to get full information about any one mapping unit, it is necessary to read both the description of the soil series to which it belongs and the description of the mapping unit.

An important part of the description of each soil series is the soil profile, that is, the sequence of layers from the surface downward to underlying material. Each series contains two descriptions of this profile. The first is brief and in terms familiar to the layman. The second is much more detailed and is for those who need to make thorough and precise studies of soils. Color terms are for moist soil unless otherwise stated. The profile described in the series is representative for mapping units in that series. If the profile of a given mapping unit is different from the one described for the series, these differences are stated in describing the mapping unit, or they are differences that are apparent in the name of the mapping unit.

As mentioned in the section "How This Survey Was Made," not all mapping units are members of a soil series. Urban land, for example, does not belong to a soil series, but nevertheless, is listed in alphabetic order along with the soil series.

Preceding the name of each mapping unit is a symbol. This symbol identifies the mapping unit on the detailed soil map. Listed at the end of the description of most mapping units are the capability unit and the woodland group to which the mapping unit has been assigned. The page for the description of each capability unit can be found by referring to the "Guide to Mapping Units" at the back of this survey.

The acreage and proportionate extent of each mapping unit are shown in table 3. Many of the terms used in describing soils can be found in the Glossary at the end of this survey, and more detailed information about the terminology and methods of soil mapping can be obtained from the Soil Survey Manual (*5*).[2]

## Adamsville Series

The Adamsville series consists of nearly level to gently sloping, somewhat poorly drained soils that are sandy to a depth of 80 inches or more. These soils occur as broad areas of the flatwoods and along the lower slopes of the sandy uplands. They formed in thick beds of sandy marine sediments. The water table is 20 to 40 inches below the surface for cumulative periods of 2 to 6 months during most years. During some wet periods it rises to within 10 to 20 inches of the surface for short periods, ordinarily less than 2 weeks. During dry periods it recedes to a depth of more than 40 inches.

In a representative profile the surface layer is dark gray sand about 6 inches thick. The underlying material to a depth of 88 inches is sand. The upper 14 inches is gray mottled with light brownish gray, the next 8 inches is gray mottled with brownish yellow, and the lower 60 inches is white mottled with light gray.

Available water capacity is low to very low. Natural fertility is low. Permeability is rapid to a depth of more than 80 inches. Organic-matter content is low.

Adamsville soils are only moderately well suited to most general farm crops and improved pasture grasses.

Representative profile of Adamsville sand, 0 to 5 percent slopes, in an old field presently in slash pine, oak, sedge, and gallberry, 175 feet south of Burbank Road and 3½ miles west of State Road 315, NW¼NW¼ sec. 17, T. 14 S., R. 23 E.

Ap—0 to 6 inches; dark gray (10YR 4/1) sand; weak medium granular structure; very friable; numerous fine medium roots; many fine and medium clean quartz grains, which give the horizon a salt and pepper effect; very strongly acid; abrupt wavy boundary.

C1—6 to 20 inches; gray (10YR 5/1) sand; few medium faint light brownish gray (10YR 6/2) mottles; single grained; loose; common fine and few medium roots; many uncoated sand grains; very strongly acid; clear wavy boundary.

C2—20 to 28 inches; gray (10YR 6/1) sand; few fine faint brownish yellow (10YR 6/6) mottles; few fine and medium roots; single grained; loose; sand grains uncoated in matrix; very strongly acid; gradual wavy boundary.

C3—28 to 88 inches; white (10YR 8/1) sand; few medium faint light gray (10YR 7/1, 7/2) mottles; single grained; loose; sand grains uncoated; very strongly acid.

The solum is 80 inches or more thick. The soil is sand to a depth of 80 inches or more and is less than 5 percent fines of silt and clay between depths of 10 and 40 inches. Reaction ranges from very strongly acid to medium acid.

The A horizon is dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 10YR 5/1), or grayish brown (10YR 5/2). It is 4 to 7 inches thick.

The C1 horizon is gray (10 YR 5/1, 6/1), light brownish gray (10YR 6/2), or very pale brown (10YR 7/3, 8/3) and is 8 to 23 inches thick. The C2 horizon is mottled very pale brown (10YR 7/3) and light gray (10YR 7/1, 7/2), or it is gray (10YR 6/1) or light gray and has few to common yellowish or brownish mottles. It is 9 to 38 inches thick. The C3 horizon is light gray (10YR 7/1) or white (10YR 8/1) and is 17 to 50 or more inches thick. Some pedons have a white (10YR 8/1) C4 horizon. Few to common mottles in shades of gray, yellow, and brown commonly occur in the C horizon.

Adamsville soils are associated with Astatula, Candler, Pomona, Placid, Pompano, and Tavares soils. They are more poorly drained than Astatula, Candler, and Tavares soils. They are better drained than Pomona soils and lack

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[2] Italic numbers in parentheses refer to Literature Cited, p. 145.

## TABLE 3.—ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

| Map symbol | Soil name | Acres | Percent |
|---|---|---|---|
| AdB | Adamsville sand, 0 to 5 percent slopes | 10,930 | 1.6 |
| Ae | Anclote sand | 1,750 | 0.3 |
| AN | Anclote-Tomoka association | 2,980 | 0.4 |
| ApB | Apopka sand, 0 to 5 percent slopes | 15,460 | 2.2 |
| ApC | Apopka sand, 5 to 12 percent slopes | 2,300 | 0.3 |
| ArB | Arredondo sand, 0 to 5 percent slopes | 78,480 | 11.3 |
| ArC | Arredondo sand, 5 to 8 percent slopes | 4,950 | 0.7 |
| AsB | Arredondo-Urban land complex, 0 to 5 percent slopes | 2,540 | 0.4 |
| AtB | Astatula sand, 0 to 5 percent slopes | 8,900 | 1.3 |
| AtC | Astatula sand, 5 to 12 percent slopes | 1,800 | 0.3 |
| BcA | Blichton sand, 0 to 2 percent slopes | 6,460 | 0.9 |
| BcB | Blichton sand, 2 to 5 percent slopes | 31,970 | 4.6 |
| BdB | Blichton-Urban land complex, 0 to 5 percent slopes | 400 | 0.1 |
| Bf | Bluff sandy clay | 4,870 | 0.7 |
| BoC | Boardman loamy sand, 5 to 8 percent slopes | 5,060 | 0.7 |
| BoD | Boardman loamy sand, 8 to 12 percent slopes | 1,380 | 0.2 |
| Bp | Borrow pits | 2,400 | 0.3 |
| CaB | Candler sand, 0 to 5 percent slopes | 137,160 | 19.7 |
| CaC | Candler sand, 5 to 12 percent slopes | 26,840 | 3.9 |
| CwA | Candler clay, overwash, 0 to 2 percent slopes | 500 | 0.1 |
| Ea | Eaton loamy sand | 5,100 | 0.7 |
| EcB | Electra sand, 0 to 5 percent slopes | 5,010 | 0.7 |
| Er | Eureka loamy fine sand | 17,260 | 2.5 |
| Es | Eureka loamy fine sand, ponded | 4,030 | 0.6 |
| FeB | Fellowship loamy sand, 2 to 5 percent slopes | 2,550 | 0.4 |
| FeC | Fellowship loamy sand, 5 to 8 percent slopes | 1,500 | 0.2 |
| FgB | Fellowship gravelly loamy sand, gravelly subsoil variant, 2 to 5 percent slopes | 870 | 0.1 |
| FgC | Fellowship gravelly loamy sand, gravelly subsoil variant, 5 to 8 percent slopes | 910 | 0.1 |
| FmA | Flemington loamy sand, 0 to 2 percent slopes | 2,270 | 0.3 |
| FmB | Flemington loamy sand, 2 to 5 percent slopes | 23,380 | 3.4 |
| GaB | Gainesville loamy sand, 0 to 5 percent slopes | 6,960 | 1.0 |
| GaC | Gainesville loamy sand, 5 to 8 percent slopes | 490 | 0.1 |
| HaB | Hague sand, 2 to 5 percent slopes | 9,020 | 1.3 |
| HaC | Hague sand, 5 to 8 percent slopes | 1,360 | 0.2 |
| HgB | Hague-Urban land complex, 0 to 5 percent slopes | 2,370 | 0.3 |
| Ho | Holopaw sand | 3,760 | 0.5 |
| JuB | Jumper fine sand, 0 to 5 percent slopes | 5,550 | 0.8 |
| KaB | Kanapaha fine sand, 0 to 5 percent slopes | 8,860 | 1.3 |
| KeA | Kendrick loamy sand, 0 to 2 percent slopes | 1,860 | 0.3 |
| KeB | Kendrick loamy sand, 2 to 5 percent slopes | 36,560 | 5.2 |
| KeC | Kendrick loamy sand, 5 to 8 percent slopes | 3,770 | 0.5 |
| LoA | Lochloosa fine sand, 0 to 2 percent slopes | 980 | 0.1 |
| LoB | Lochloosa fine sand, 2 to 5 percent slopes | 12,450 | 1.8 |
| LoC | Lochloosa fine sand, 5 to 8 percent slopes | 1,150 | 0.2 |
| Ly | Lynne sand | 20,540 | 2.9 |
| Ma | Martel sandy clay loam | 3,780 | 0.5 |
| McB | Micanopy fine sand, 2 to 5 percent slopes | 6,250 | 0.9 |
| McC | Micanopy fine sand, 5 to 8 percent slopes | 780 | 0.1 |
| Ok | Okeechobee muck | 7,460 | 1.1 |
| Pa | Paisley loamy fine sand | 11,780 | 1.7 |
| PB | Pamlico-Martel association | 9,180 | 1.3 |
| PeB | Pedro-Arredondo complex, 0 to 5 percent slopes | 7,790 | 1.1 |
| Pm | Placid sand | 11,730 | 1.7 |
| Pn | Placid-Pompano-Pomona complex | 6,030 | 0.9 |
| Po | Pomona sand | 19,790 | 2.8 |
| Pp | Pompano sand | 3,870 | 0.6 |
| Pr | Pompano sand, ponded | 2,990 | 0.4 |
| SpB | Sparr fine sand, 0 to 5 percent slopes | 26,720 | 3.8 |
| SpC | Sparr fine sand, 5 to 8 percent slopes | 1,270 | 0.2 |
| SuB | Sparr-Urban land complex, 0 to 5 percent slopes | 780 | 0.1 |
| TaB | Tavares sand, 0 to 5 percent slopes | 13,230 | 1.9 |
| Tc | Terra Ceia muck | 5,560 | 0.8 |
| Te | Terra Ceia muck, acid variant | 1,920 | 0.3 |
| To | Tomoka muck | 2,490 | 0.4 |
| UaA | Udalfic Arents, 0 to 5 percent slopes | 740 | 0.1 |
| UaF | Udalfic Arents, 15 to 60 percent slopes | 2,340 | 0.3 |
| Ur | Urban land | 790 | 0.1 |
| WaC | Wacahoota loamy sand, 5 to 8 percent slopes | 5,270 | 0.8 |
| WgB | Wacahoota gravelly sand, gravelly subsoil variant, 2 to 5 percent slopes | 1,170 | 0.2 |
| WgC | Wacahoota gravelly sand, gravelly subsoil variant, 5 to 8 percent slopes | 1,080 | 0.2 |
| ZuA | Zuber loamy sand, 0 to 2 percent slopes | 570 | 0.1 |
| ZuB | Zuber loamy sand, 2 to 5 percent slopes | 6,780 | 1.0 |
| ZuC | Zuber loamy sand, 5 to 8 percent slopes | 1,880 | 0.3 |
|  | Mine pits[1] | 1,260 | 0.2 |
|  | Water[2] | 4,616 | 0.6 |
|  | Total | 695,586 | 100.0 |

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[1] Indicated on soil map by appropriate symbol.

[2] Indicated on soil map by appropriate symbol for pond or lake. The ponds or lakes are less than 40 acres in size.

the Bh horizon characteristic of those soils. They are better drained than Placid and Pompano soils and lack the umbric epipedon characteristic of Placid soils.

**AdB—Adamsville sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, somewhat poorly drained soil that occurs as small and large areas in the flatwoods and along the lower slopes of the sandy uplands. The water table rises to within 10 to 20 inches of the surface for less than 2 weeks during wet periods, but remains at 20 to 40 inches for cumulative periods of 2 to 6 months during most years. It recedes to a depth of more than 40 inches during dry periods.

Included with this soil in mapping are a few areas of a similar soil that is fine sand, is extremely acid, or has a slope of 5 to 8 percent. Also included are small areas of Candler, Pomana, Pompano, and Tavares soils. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, longleaf pine, water oak, and live oak and an understory of low-growing native shrubs and grasses. Most areas are still in native vegetation. Capability unit IIIw–1; woodland group 3w1.

## Anclote Series

The Anclote series consists of nearly level, very poorly drained sandy soils that formed in beds of sandy marine sediments. These soils are in depressions, on low flats, and along poorly defined drainageways in the flatwoods. The water table is within a depth of 10 inches for more than 6 months during most years. Depressional areas are covered with water for 6 months or more annually.

In a representative profile the surface layer is sand about 20 inches thick. The upper 16 inches is black, and the lower 4 inches is very dark gray. The underlying material to a depth of 80 inches is light gray sand mottled with dark gray.

Available water capacity is medium in the upper 16 inches and low to very low below. Permeability is rapid. Natural fertility and organic-matter content are high in the upper 16 inches and low below.

Under natural conditions, Anclote soils are poorly suited to crops and pasture. If drainage is adequate and water is otherwise controlled, however, they are well suited to commonly grown special crops and improved pasture.

Representative profile of Anclote sand, 0 to 2 percent slopes, in a swamp 250 feet west of the Oklawaha River at Cabbage Landing, NE¼NE¼ sec. 5, T. 14 S., R. 24 E.

A11—0 to 16 inches; black (N 2/0) sand; weak fine and medium granular structure; very friable; few fine and medium roots; slightly acid; clear wavy boundary.

A12—16 to 20 inches; very dark gray (10YR 3/1) sand; single grained; loose; few fine and medium roots; slightly acid; clear wavy boundary.

C1—20 to 29 inches; light gray (10YR 7/1) sand; common fine and medium dark gray (10YR 4/1) mottles; single grained; loose; few fine roots; neutral; gradual wavy boundary.

C2—29 to 80 inches; light gray (10 YR 7/1) sand; few fine and medium dark gray (10YR 4/1) mottles; single grained; loose; neutral.

The A horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10YR 3/1), or very dark grayish brown (10YR 3/2) sand. It ranges from medium acid to slightly acid and is less than 20 percent organic matter. It is generally 12 to 18 inches thick, but ranges from 10 to 24 inches.

The C horizon is gray (10YR 5/1, 6/1), light gray (10YR 7/1), grayish brown (10YR 5/2), or light brownish gray (10YR 6/2) sand, fine sand, or loamy fine sand. In places it is mottled with gray, yellow, and brown. It is slightly acid or neutral. It is more than 80 inches thick.

Anclote soils are closely associated with Bluff, Holopaw, Pompano, and Tomoka soils. They are sandy to a depth of more than 80 inches, whereas Bluff soils are sandy clay loam throughout and Holopaw soils are sandy clay loam at a depth of 40 to 80 inches. They are more poorly drained than Pompano soils and have a thicker dark colored A horizon, are less acid, and have higher base saturation. They are of mineral origin, whereas Tomoka soils are of organic origin.

**Ae—Anclote sand.** This is a very poorly drained soil that occurs as small areas on low flats, in depressions, and along poorly defined drainageways in the flatwoods. It has the profile described as representative of the series. Slopes are 0 to 2 percent. The water table is within a depth of 10 inches for more than 6 months, and in depressions the surface is covered with about 4 to 20 inches of water for 6 months or more during most years. Areas along the Oklawaha River are subject to flooding.

Included with this soil in mapping are small areas of Holopaw, Okeechobee, Placid, Bluff, and Tomoka soils; small areas where the surface layer is 8 to 16 inches thick and is more than 20 percent organic matter; and a few small areas of a similar soil that has a sandy clay loam subsoil at a depth of 50 to 80 inches. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is chiefly cypress, bay, gum, palm, ash, and maple. Some depressions have nonwoody vegetation of waterhyacinth, sawgrass, watercress, sedge, and other water-tolerant plants. Most areas are still in natural vegetation. Capability unit IIIw–4; woodland group 2w3.

**AN—Anclote-Tomoka association.** This mapping unit consists of very poorly drained, nonacid mineral and organic soils. It occurs as large areas on the flood plain along the Oklawaha River and as areas about one-fourth to one-half mile wide in the swamps along the Oklawaha and Withlacoochee Rivers. It is about 45 percent Anclote soil and 40 percent Tomoka soil, but the composition differs from area to area. The outer rims of delineated areas are dominantly Anclote soil, and the flooded areas toward the river are dominantly Tomoka soil. Slopes are less than 2 percent.

This mapping unit is subject to flooding. During most years, the water table is within a depth of 10 inches for 9 to 12 months and water is on the surface for more than 8 months.

Included in this unit in mapping are areas where a 24- to 35-inch, very dark gray sandy surface layer is underlain to a depth of more than 60 inches by gray or light gray, nonacid sand; areas where an 8- to 16-inch, black surface layer that is more than 20 percent organic matter is underlain to a depth of more than 60 inches by sandy material; and many areas of Okeechobee and Terra Ceia soils. The extent of included soils varies, but averages about 15 percent.

The natural vegetation is swamp hardwood, chiefly water tupelo, cypress, ash, palm, and swamp maple. The unit is still in natural vegetation. Capability unit Vw-1; woodland group 2w3 for Anclote soil, Tomoka soil not assigned.

## Apopka Series

The Apopka series consists of nearly level to strongly sloping, well drained soils that formed in thick beds of sandy and loamy deposits. These soils occur as small areas in the uplands. The water table is at a depth of more than 72 inches.

In a representative profile the surface layer is dark gray sand about 6 inches thick. The subsurface layer is about 49 inches of sand, many grains of which are uncoated. The upper 22 inches is light yellowish brown, and the lower 27 inches is yellow. The subsoil is about 26 inches thick. The upper 5 inches is yellowish red sandy clay loam having a few lenses of sandy loam, the next 9 inches is yellowish red sandy clay loam mottled with red, and the lower 12 inches is mottled yellowish red and red light sandy clay loam. The underlying material to a depth of 88 inches is mottled strong brown, yellowish red, yellowish brown, and white, partly weathered sandy loam and sandy clay loam.

Available water capacity is very low in the upper 55 inches and medium to high below. Permeability is rapid in the upper 55 inches and moderate below. Natural fertility and the organic-matter content are low.

Apopka soils are only moderately well suited to most general farm crops. They are well suited to citrus if the climate is favorable. They are well suited to improved pasture of deep-rooting grasses and legumes.

Representative profile of Apopka sand, 0 to 5 percent slopes, about 150 feet north of graded county road, 2 miles west of Weirsdale, and one-half mile north of State Road 42, SE¼SE¼ sec. 25, T. 17 S., R. 23 E.

Ap—0 to 6 inches; dark gray (10YR 4/1) sand; weak medium granular structure; very friable; common fine and medium roots; many uncoated sand grains; few fine carbon particles; very strongly acid; clear smooth boundary.

A21—6 to 28 inches; light yellowish brown (10YR 6/4) sand; single grained; loose; few fine and medium roots; many uncoated sand grains; few fine carbon particles; very strongly acid; clear wavy boundary.

A22—28 to 55 inches; yellow (10YR 7/6) sand; single grained; loose; few fine and medium roots; many uncoated sand grains; few fine carbon particles; very strongly acid; abrupt wavy boundary.

B21t—55 to 60 inches; yellowish red (5YR 5/8) sandy clay loam; few fine lenses of sandy loam; weak medium subangular blocky structure; friable; very few fine roots; few fine carbon particles; sand grains coated and bridged with clay; few uncoated sand grains; very strongly acid; clear wavy boundary.

B22t—60 to 69 inches; yellowish red (5YR 5/8) sandy clay loam; few medium and coarse distinct red (2.5YR 4/8) mottles; weak medium subangular blocky structure; friable; few fine carbon particles; sand grains coated and bridged with clay; few uncoated sand grains; very strongly acid; gradual wavy boundary.

B3—69 to 81 inches; mottled yellowish red (5YR 5/8) and red (2.5YR 4/8 )light sandy clay loam; few fine distinct white (10YR 8/2) mottles; weak fine subangular blocky structure; friable; few fine carbon particles; few uncoated sand grains; very strongly acid; gradual wavy boundary.

C—81 to 88 inches; mottled strong brown (7.5YR 5/8), yellowish red (5YR 5/8), yellowish brown (10YR 5/6), and white (10YR 8/1), partly weathered sandy loam and sandy clay loam; massive; slightly firm; very strongly acid.

The solum is more than 60 inches thick. Reaction ranges from very strongly acid to medium acid in all horizons.

The A horizon is 40 to 80 inches thick. The Ap or A1 horizon is dark gray (10YR 4/1), dark grayish brown (10YR 4/2), or grayish brown (10YR 5/2) sand 5 to 8 inches thick. In some pedons the Ap horizon is very dark gray (10YR 3/1) or very dark grayish brown (10YR 3/2).

The A2 horizon is very pale brown (10YR 7/3, 7/4), pale brown (10YR 6/3), brown (10YR 5/3), light yellowish brown (10YR 6/4), yellow (10YR 7/6, 7/8), brownish yellow (10YR 6/6, 6/8, or yellowish brown (10YR 5/4, 5/6, 5/8). In some pedons it has few to common fine mottles of gray (10YR 6/1), light gray (10YR 7/1, 7/2), and white (10YR 8/1, 8/2). These mottles are the color of the clean sand grains; they do not indicate wetness. The A2 horizon is 35 to 72 inches thick. It is less than 5 percent fines of silt and clay. Many of the sand grains are uncoated.

The B2t horizon is strong brown (7.5YR 5/6, 5/8), yellowish red (5YR 5/6, 5/8, 4/6, 4/8), light yellowish brown (10YR 6/4), brownish yellow (10YR 6/6, 6/8), yellowish brown (10YR 5/6, 5/8), and red (2.5YR 5/6, 5/8, 4/6, 4/8) sandy loam or sandy clay loam. It ranges from 18 to 32 inches or more in thickness.

The B3 horizon is strong brown (7.5YR 5/6, 5/8), yellowish red (5 YR 5/6, 5/8, 4/6, 4/8), or red (2.5YR 4/6, 4/8) sandy loam or sandy clay loam 10 inches or more thick. In many pedons it has few to common mottles in various shades of yellow, brown, and red. Mottles of gray (10YR 6/1), light gray (10YR 7/1, 7/2), or white (10YR 8/1, 8/2), are probably remnants of the parent material. They do not indicate wetness.

The C horizon is mottled gray (10YR 5/1, 6/1), yellowish brown (10YR 5/6, 5/8), strong brown (7.5YR 5/6, 5/8), and yellowish red (5YR 5/6, 5/8) sandy loam and sandy clay loam.

Apopka soils are associated with Candler, Jumper, Sparr, and Tavares soils. They have a loamy Bt horizon beginning at a depth of 40 to 80 inches, whereas Candler soils are sandy to a depth of more than 80 inches. They are better drained than Jumper soils and have a thicker A horizon. They are better drained than Sparr and Tavares soils. They also differ from Tavares soils in having a Bt horizon that begins at a depth of 40 to 80 inches.

**ApB—Apopka sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, well drained soil that generally occurs as small areas in the uplands. It has the profile described as representative of the series. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas, of similar soils, where the sandy surface and subsurface layers combined are less than 40 inches thick, the slope is 5 to 8 percent, or the surface layer is fine sand and small areas of Candler, Jumper, and Tavares soils. Also included, in the western part of the county, are a few areas where 35 to 60 inches of strongly acid to slightly acid fine sand overlies a slightly acid to neutral subsoil and calcareous limestone. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is longleaf pine, turkey oak, post oak, bluejack oak, and live oak and an understory of native grasses. Most areas are cleared and are in citrus. Capability unit IIIs-1; woodland group 3s1.

**ApC—Apopka sand, 5 to 12 percent slopes.** This is a sloping to strongly sloping, well drained soil that occurs as small areas on sharp-breaking slopes in the uplands. It has a profile similar to that described as representative of the series, but has a thinner surface layer. The hazard of erosion is slight. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are areas of a similar soil, where the sandy surface and subsurface layers combined are less than 40 inches thick, areas where the subsoil is slightly compact, and small areas of Candler, Jumper, Sparr, and Tavares soils. Also included are small areas, of a similar soil, where the slope is 0 to 5 percent. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is chiefly longleaf pine, turkey oak, post oak, and bluejack oak and an understory of native grasses. Most areas are in citrus or improved pasture. Capability unit IVs–2; woodland group 3s1.

## Arredondo Series

The Arredondo series consists of nearly level to sloping, well drained soils that formed in thick beds of sandy and loamy marine material. These soils occur as broad rolling areas of the upland. The water table is at a depth of more than 72 inches.

In a representative profile the surface layer is dark grayish brown sand about 7 inches thick. The subsurface layer is mixed yellowish brown and dark yellowish brown sand about 11 inches thick. The subsoil extends to a depth of 90 inches or more. In sequence downward, it is 28 inches of yellowish brown sand mottled with strong brown, 19 inches of strong brown sand having a few white mottles, 5 inches of strong brown loamy sand, and 20 inches of strong brown fine sandy loam.

Available water capacity is low in the upper 65 inches, medium from 65 to 70 inches, and medium to high below. Permeability is rapid in the upper 65 inches, moderately rapid from 65 to 70 inches, and moderate below. Natural fertility is low in the sandy upper 70 inches and medium in the finer textured layers below. Organic-matter content is low.

Arredondo soils are moderately well suited to most general farm crops. They are well suited to improved pasture of deep-rooting grasses and legumes.

Representative profile of Arredondo sand, 0 to 5 percent slopes, in a pasture 115 feet west of Interstate Highway 75 and 1.5 miles north of U.S. Highway 27, NE¼SE¼ sec. 34, T. 14 S., R. 21 E.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) sand; weak fine granular structure; very friable; many fine and medium roots; strongly acid; abrupt smooth boundary.

A2—7 to 18 inches; mixed yellowish brown (10YR 5/4) and dark yellowish brown (10YR 4/4) sand; weak fine granular structure; very friable; common fine and medium roots; sand grains coated; few fine carbon particles; few fine rounded black particles; medium acid; clear wavy boundary.

B11—18 to 46 inches; yellowish brown (10YR 5/6) sand; few medium strong brown (7.5YR 5/6) mottles and few fine white mottles and streaks of uncoated sand grains; weak fine granular structure; very friable; few fine and medium roots; sand grains coated; few fine carbon particles; few fine black rounded particles; strongly acid; gradual wavy boundary.

B12—46 to 65 inches; strong brown (7.5YR 5/6) sand with few fine white mottles and streaks of uncoated sand grains, streaks ¼ inch to 3 inches long; moderate medium granular structure; friable; few fine and medium roots; sand grains well coated; few fine carbon particles; few fine rounded black particles; strongly acid; gradual wavy boundary.

B21t—65 to 70 inches; strong brown (7.5YR 5/8) loamy sand; few fine white mottles and streaks of uncoated sand grains; moderate medium granular structure; friable; few fine and medium roots; sand grains coated and bridged with clay; few fine rounded black particles; medium acid; gradual wavy boundary.

B22t—70 to 90 inches; strong brown (7.5YR 5/6) fine sandy loam; moderate medium granular and weak medium subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; few fine rounded black particles; strongly acid.

The solum is more than 80 inches thick. Reaction ranges from very strongly acid to medium acid in all horizons. Few weathered and leached phosphatic pebbles ranging in diameter from 2 to 20 millimeters are in most pedons.

The A1 or Ap horizon is dark gray (10YR 4/1), dark grayish brown (10YR 4/2), or grayish brown (10YR 5/2). It is 5 to 8 inches thick.

The A2 horizon is light yellowish brown (10YR 6/4), yellowish brown (10YR 5/4), or dark yellowish brown (10YR 4/4). The B1 horizon is yellowish brown (10YR 5/6, 5/8), brownish yellow (10YR 6/6, 6/8), or strong brown (7.5YR 5/6, 5/8). More than 50 percent of the sand grains in the A and B1 horizons are well coated with clay and oxides. These horizons are 5 to 15 percent silt and clay.

The B2t horizon is light yellowish brown (10YR 6/4), brownish yellow (10YR 6/6), yellowish brown (10YR 5/4, 5/6, 5/8), or strong brown (7.5YR 5/6, 5/8). The B21t horizon is loamy sand, loamy fine sand, or sandy loam. It is 4 to 8 inches thick. The B22t horizon is sandy loam, fine sandy loam, or sandy clay loam. It is 15 to 32 inches thick.

The B3 horizon, if it occurs, is dominantly yellowish brown (10YR 5/4, 5/6, 5/8) or strong brown (10YR 5/6, 5/8, but in places is light yellowish brown (10YR 6/4) and brownish yellow (10YR 6/6, 6/8). In places it has gray mottles. It is sandy loam or sandy clay loam 0 to more than 10 inches thick.

Arredondo soils are associated with Candler, Hague, Kanapaha, Kendrick, and Sparr soils. They are sandy to a depth of 40 to 80 inches, whereas Candler soils are sandy to a depth of more than 80 inches. They do not have the uniform loamy sand texture that is common in Gainesville soils. They have a thicker A horizon than Kendrick and Hague soils and are better drained than Kanapaha and Sparr soils.

**ArB—Arredondo sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, well drained soil that occurs as both small and large areas in the upland. It has the profile described as representative of the series. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas of Candler, Kendrick, Hague, Gainesville, and Sparr soils; a few small areas where the surface layer is fine sand, loamy sand, and loamy fine sand; a few areas of a similar soil, where the slope is 5 to 8 percent; and, in the south-central part of the county, spots where 35 to 65 inches of strongly acid to medium acid fine sand overlies limestone. Also included are rock outcrop, sinkholes, and a few small depressions where a very dark gray or black surface layer 8 to 24 inches thick overlies gray sand. The rock outcrop, the sinkholes, and the depressions are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, longleaf pine, live oak, laurel oak, water oak, hickory, sweetgum, and dogwood. Most areas are cleared and are used for cultivated crops and improved pasture. Capability unit IIIs-1; woodland group 3s1.

**ArC—Arredondo sand, 5 to 8 percent slopes.** This is a sloping, well drained soil that occurs as small areas on sharp-breaking slopes and on long slopes of the upland. In places a few rills have formed as a result of erosion. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas of Candler, Kendrick, and Hague soils; a few small depressions where a black surface layer 8 to 24 inches thick overlies yellowish brown to grayish brown sandy material; and a few areas, of a similar soil, where the slope is 0 to 5 or 8 to 12 percent. Also included are a few small areas where the surface layer is fine sand, loamy sand, and loamy fine sand. Rock outcrop and sinkholes, both of which occur in places, are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is slash pine, longleaf pine, live oak, water oak, hickory, and dogwood and an understory of shrubs and native grasses. Most areas have been cleared and are in cultivated crops or improved pasture. Capability unit IVs-2; woodland group 3s1.

**AsB—Arredondo-Urban land complex, 0 to 5 percent slopes.** This mapping unit is about 60 to 70 percent well drained Arredondo sand and 30 to 40 percent Urban land. The percentage differs from one mapped area to another. Arredondo sand is in open areas, such as parks, playgrounds, and vacant lots. Urban land is covered with sidewalks, streets, houses, driveways, industrial buildings, parking lots, and other structures.

About 15 to 25 percent of the open area has been modified by the cutting, grading, and spreading of the soil material in preparing sites for buildings, streets, and septic tanks. The soil material excavated is spread over adjacent areas. In most places it is 1 inch to 12 inches thick. It is sandy.

Included in this unit in mapping are Gainesville, Candler, and Kendrick soils, all of which are similar to the Arredondo sand. These included soils make up about 15 percent of some open areas. Also included are small areas of a similar soil that has a slope of 5 to 8 percent.

This mapping unit is well suited to lawn grasses and ornamental plants. The water table is at a depth of more than 72 inches. Not assigned to a capability unit or woodland group.

## Astatula Series

The Astatula series consists of nearly level to strongly sloping, excessively drained sandy soils that formed in thick beds of sandy marine sediments more than 7 feet thick. These soils are on broad sand ridges in the upland. The water table is at a depth of more than 72 inches.

In a representative profile a 1-inch covering of leaves, roots, pine needles, twigs, and partly decomposed organic material is at the surface. The surface layer is gray sand about 3 inches thick. The underlying material to a depth of 92 inches is sand. The upper 54 inches is yellowish brown, and the lower 35 inches is very pale brown.

Available water capacity is very low. Organic-matter content is very low. Natural fertility is low. Permeability is very rapid.

Astatula soils are not suited to general farm crops. They are of only limited use for improved pasture, forest, and citrus.

Representative profile of Astatula sand, 0 to 5 percent slopes, in an undisturbed area where the plant cover is chiefly of sand pine, scrub live oak, American holly, and rosemary; 1.2 miles west of Interstate Highway 75 and 200 feet north of State Road 484, SW¼NE¼ sec. 11, T. 17 S., R. 21 E.

O1—1 inch to 0; leaves, roots, pine needles, twigs, and partly decomposed organic material.

A1—0 to 3 inches; gray (10YR 5/1) sand; single grained; loose; common fine and medium roots; many uncoated sand grains; strongly acid; abrupt smooth boundary.

C1—3 to 57 inches; yellowish brown (10YR 5/8) sand; single grained; loose; few fine and medium roots; many uncoated sand grains; few isolated medium-sized dark brown (10YR 4/3) sandy nodules in upper 6 inches; strongly acid; clear wavy boundary.

C2—57 to 72 inches; very pale brown (10YR 7/4) sand; single grained; loose; very few roots; many uncoated sand grains; strongly acid; gradual wavy boundary.

C3—72 to 92 inches; very pale brown (10YR 8/4) sand; single grained; loose; many uncoated sand grains; strongly acid.

Astatula soils have a uniform texture of sand to a depth of more than 80 inches. They are less than 5 percent silt and clay between depths of 10 and 40 inches. Reaction is very strongly acid to medium acid in all horizons.

The A horizon is dark gray (10YR 4/1), dark grayish brown (10YR 4/2, 2.5Y 4/2), gray (10YR 5/1, 6/1), grayish brown (10YR 5/2, 2.5Y 5/2), or light brownish gray (10YR 6/2). It is 2 to 5 inches thick.

Some pedons have a 1- to 5-inch AC horizon that is mixed gray (10YR 5/1, 6/1), light gray (10YR 7/1, 7/2), pale brown (10YR 6/3), very pale brown (10YR 7/3, 7/4), and light yellowish brown (10YR 6/4).

The C horizon is very pale brown (10YR 7/3, 7/4, 8/4), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), yellow (10YR 7/6, 7/8), brownish yellow (10YR 6/6, 6/8), and yellowish brown (10YR 5/4, 5/6, 5/8) to strong brown (7.5YR 5/6, 5/8). In some pedons the dark brown (10YR 4/3), dark yellowish brown (10YR 4/4), or brown (10YR 5/3) nodules do not occur in the upper 6 inches of this horizon. Few to many fine and medium mottles and streaks of gray (10YR 6/1), light gray (10YR 7/1), and white (10YR 8/1, 8/2) occur in some pedons. These mottles are the color of the sand grains; they do not indicate wetness.

Astatula soils are closely associated with Adamsville, Candler, Electra, Pompano, and Tavares soils. They are more excessively drained than Candler soils, and they do not have the thin lamellae that occur in those soils at a depth of about 65 to 75 inches. They are better drained than Adamsville, Pompano, Tavares, and Electra soils. They also differ from Electra soils in having no Bh horizon.

**AtB—Astatula sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, excessively drained soil that occurs as small and large areas in the upland. It has the profile described as representative of the series. To a depth of 40 inches or more, many of the sand grains are uncoated. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are a few areas of a similar soil, where the texture is fine sand; a few small areas where the slope is 5 to 12 percent; and small areas of a similar excessively drained soil that is sandy clay loam below a depth of 40 to 80 inches. Also included are a few small areas of Candler, Electra, Pompano, Adamsville, and Tavares soils. Included soils make up about 12 percent of any one mapped area.

The natural vegetation is chiefly sand pine, bluejack oak, and sand live oak and a sparse understory of rosemary, holly, pineland three-awn, and palmetto. Most areas are still in natural vegetation. Capability unit VIs–1; woodland group 5s1.

**AtC—Astatula sand, 5 to 12 percent slopes.** This is a sloping to strongly sloping, excessively drained soil that occurs as small and large areas of the upland. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are a few areas of a similar soil, where the texture is fine sand; a few areas where the slope is 0 to 5 percent; and a few spots of an excessively drained soil that is sandy clay loam below a depth of 60 to 80 inches. Also included are a few small areas of Candler, Electra, Pompano, and Adamsville soils. Included soils make up about 10 percent of any one mapped area.

The natural vegetation is chiefly sand pine and, in some areas, intermixed bluejack oak, sand live oak, and rosemary. Most areas are still in native vegetation. Capability unit VIIs–1; woodland group 5s1.

## Blichton Series

The Blichton series consists of nearly level to gently sloping, poorly drained soils that formed in thick beds of loamy marine sediments. These soils occur as small and large areas in the upland. The water table is within a depth of 10 inches for cumulative periods of 1 month to 4 months during most years. During dry periods it recedes to a depth of more than 40 inches. Wet slopes are the result of seepage.

In a representative profile the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is gray sand about 21 inches thick. The subsoil extends to a depth of 77 inches. The upper 4 inches is gray sandy loam, about 4 percent of which is ironstone and weathered phosphatic nodules. The next 35 inches is mottled dark gray sandy clay loam. The upper 15 inches of this layer is about 12 percent plinthite and has a few ironstone and weathered phosphatic nodules, and the lower 20 inches is about 10 percent plinthite and has common medium ironstone nodules. The lower 12 inches of the subsoil is mottled gray sandy clay loam and lenses of sandy loam. The underlying material between depths of 77 and 81 inches is gray stratified sandy loam, loamy sand, and sandy clay loam mottled with yellowish brown and yellowish red.

Available water capacity is low in the upper 26 inches and medium below. Permeability is rapid in the upper 26 inches, moderately rapid from 26 to 30 inches, moderate from 30 to 77 inches, and moderately rapid from 77 to 81 inches. Natural fertility is low in the upper 26 inches and medium below. Organic-matter content is low.

Blichton soils are moderately well suited to commonly grown cultivated crops. They are well suited to improved pasture of locally grown grasses and legumes (fig. 2).

Representative profile of Blichton sand, 2 to 5 percent slopes, in bahiagrass pasture about 2½ miles southwest of Ocala, 0.9 of a mile west-northwest of intersection of Buffington Road and State Road 475, SW¼NE¼ sec. 38, T. 15 S., R. 22 E. (Catalina de Jesus Hijuelas Grant):

Ap—0 to 5 inches; very dark gray (N 3/0) sand; weak medium granular structure; very friable; common fine and medium roots; few ironstone and weathered phosphatic nodules; medium acid; abrupt wavy boundary.

A2—5 to 26 inches; gray (10YR 6/1) sand; few large light gray (10YR 7/1) splotches and few fine distinct very pale brown streaks along root channels in upper part; single grained; loose; common fine and medium roots; about 2 percent fine ironstone and weathered phosphatic nodules; medium acid; clear wavy boundary.

B21tg—26 to 30 inches; gray (10YR 5/1) sandy loam; moderate medium and coarse granular structure; friable; common fine and medium roots; few fine sand pockets; about 4 percent ironstone and weathered phosphatic nodules; strongly acid; clear wavy boundary.

B22tg—30 to 45 inches; dark gray (N 4/0) sandy clay loam; common large prominent red (2.5YR 4/8) and yellowish red (5YR 5/8) mottles; moderate medium angular and subangular blocky structure; friable; few fine and medium roots; faint discontinuous clay films; about 12 percent plinthite; few ironstone and weathered phosphatic nodules; some rod-shaped fragments or pieces of siliceous

*Figure 2.*—Alyce clover on Blichton sand, 2 to 5 percent slopes.

material about 7 millimeters (¼ inch) in diameter and 2.5 to 5 centimeters (1 inch to 2 inches) in length; very strongly acid; gradual wavy boundary.

B23tg—45 to 65 inches; dark gray (N 4/0) sandy clay loam, gray (N 5/0), crushed; common medium distinct yellowish red (5YR 5/8) and few fine light gray mottles; moderate medium angular and subangular blocky structure; friable; few fine and medium roots; distinct clay films along ped faces; about 10 percent plinthite; common medium ironstone nodules; very strongly acid; gradual wavy boundary.

B24tg—65 to 77 inches; gray (5Y 5/1) sandy clay loam; common fine distinct very pale brown and common fine prominent yellowish red mottles; weak subangular blocky structure; friable; few medium light gray (10YR 7/1) lenses of sandy loam; very strongly acid; gradual wavy boundary.

Cg—77 to 81 inches; gray (N 5/0) stratified sandy loam, loamy sand, and sandy clay loam; common medium and coarse yellowish brown (10YR 5/6) and common medium prominent yellowish red (5YR 5/6) mottles; massive; friable; very strongly acid.

The solum is 60 inches or more thick. Ironstone and weathered phosphatic nodules are in the A and Btg horizons. Fragments or pieces of rod-shaped siliceous material less than 3 inches in length and about one-fourth inch in diameter are, by volume, 1 to 5 percent of these horizons in some pedons. Plinthite occurs within a depth of 30 to 42 inches. The content of plinthite ranges from 5 to 20 percent.

The texture of the A horizon is sand. Reaction ranges from very strongly acid to medium acid. The A1 and Ap horizons are very dark gray (N 3/0, 10YR 3/1), or dark gray (N 4/0, 10YR 4/1). They are 4 to 9 inches thick. If very dark gray, they are 4 to 6 inches thick. The A2 horizon is gray (10YR 5/1, 6/1), light gray (10YR 7/1, 7/2), light brownish gray (10YR 6/2), and grayish brown (10YR 5/2). It is 16 to 30 inches thick. In some pedons it has few to common mottles in shades of yellow, brown, and gray.

Reaction in the Btg horizon is very strongly acid or strongly acid. The B21tg horizon is dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 6/0; 10YR 5/1, 6/1), light brownish gray (10YR 6/2), and light gray (10YR 7/1, 7/2). Most pedons have common mottles in shades of yellow, brown, and red. Texture of the B21tg horizon is sandy loam or fine sandy loam. Thickness is 3 to 6 inches. The B22tg, B23tg, and B24tg horizons are dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 6/0; 10YR 5/1, 6/1), or light grayish brown (10YR 6/2) sandy clay loam mottled with yellow, brown, and red. They are 38 to 54 inches thick. Some pedons have a B3g horizon the same color and texture as the Btg horizon.

The Cg horizon is dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 6/0; 10YR 5/1, 6/1), or light gray (10YR 7/1) sandy loam or sandy clay loam that has lenses of coarser textured material or is stratified with this material. In a few pedons it is sandy clay or clay.

Blichton soils are closely associated with Fellowship, Flemington, Kanapaha, Kendrick, Lochloosa, Micanopy, and Sparr soils. They have a thicker A horizon and less clay in the Btg horizon than Fellowship and Flemington soils. Their A horizon is thinner than that of Kanapaha and Sparr soils and thicker than that of Micanopy soils. They are more poorly drained than Kendrick, Lochloosa, Sparr, and Micanopy soils.

**BcA—Blichton sand, 0 to 2 percent slopes.** This is a nearly level, poorly drained soil that occurs as small areas in the upland. Runoff is slow, and during extremely wet periods the surface may be covered with water for brief periods. The water table is at a depth of less than 10 inches for cumulative periods of 1 month to 4 months during most years, but recedes to a depth of more than 40 inches during drier periods.

Included with this soil in mapping are small areas of a similar soil that is less than 5 percent plinthite within a depth of 60 inches and a few areas where 20 to 40 inches of pale brown to yellowish brown sandy material overlies a subsoil of gray to light gray sandy clay loam. Also included are some spots of Kanapaha, Flemington, and Lochloosa soils and a few areas, of a similar soil, where the slope is 2 to 5 percent. Rock outcrop and sinkholes, both of which occur in some areas, are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is chiefly slash pine, loblolly pine, water oak, and sweetgum. The understory is dominantly waxmyrtle and native grasses. Most areas are still in forest. Most cleared areas are in improved pasture. Capability unit IIIw–5; woodland group 2w1.

**BcB—Blichton sand, 2 to 5 percent slopes.** This is a gently sloping, poorly drained soil occurring as both small and large areas in the upland. It has the profile described as representative of the series. The water table is within a depth of 10 inches for 1 month to 4 months during most years. During dry periods it recedes to a depth of more than 40 inches.

Included with this soil in mapping are a few small areas of a similar soil that is moderately eroded; some areas, of a similar soil, where the volume of plinthite within a depth of 60 inches is less than 5 percent of any one horizon; and a few small areas where 20 to 40 inches of pale brown and yellowish brown sand overlies sandy clay loam. Also included are some spots of Kanapaha, Flemington, Lochloosa, and Sparr soils; a few small areas, of a similar soil, where the subsurface layer and the upper 20 inches of the subsoil are 5 to 35 percent gravel or rock fragments less than 3 inches in diameter; and spots of a similar soil that has a slope of 0 to 2 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is slash pine, loblolly pine, longleaf pine, water oak, dogwood, sweetgum, and hickory and an understory of waxmyrtle, gallberry, and native grasses. Although most areas are still in forest, many have been cleared. Most of the cleared areas are used for improved pasture. Capability unit IIIw–7; woodland group 2w1.

**BdB—Blichton-Urban land complex, 0 to 5 percent slopes.** This mapping unit is 65 to 75 percent poorly drained Blichton sand and 25 to 35 percent Urban land. The percentage differs from one mapped area to another. Blichton sand is in open areas, such as parks, playgrounds, and vacant lots. Urban land is covered with sidewalks, streets, houses, driveways, industrial buildings, parking lots, and other structures.

About 20 to 30 percent of the open area has been modified by the cutting, grading, and spreading of the soil material in preparing sites for buildings, streets, and septic tanks. The soil material excavated is spread over adjacent areas. In most places it is 1 inch to 12 inches thick. It is sandy and loamy.

Included in this unit in mapping are Flemington, Kanapaha, and Sparr soils, all of which are similar to the Blichton sand. These included soils make up about 20 percent of some open areas. Also included are small areas where the slope is 5 to 8 percent.

This mapping unit is well suited to lawn grasses and many kinds of ornamental plants. The water table is within a depth of 10 inches for 1 month to 4 months during most years. During dry seasons it recedes to a depth of 40 inches or more. Not assigned to a capability unit or woodland group.

## Bluff Series

The Bluff series consists of nearly level, very poorly drained soils that formed in thick beds of alkaline loamy marine sediments. These soils are along the flood plain of the Oklawaha River. The water table is within a depth of 10 inches for more than 6 months during most years. The soils are usually flooded for a period of 1 month or more annually.

In a representative profile the surface layer is about 17 inches thick. The upper 6 inches is black sandy clay, the next 7 inches is black sandy clay loam, and the lower 4 inches is very dark gray sandy clay. The subsoil is between depths of 17 and 60 inches. The upper 12 inches is dark gray sandy clay and has few medium streaks and pockets of white calcium carbonate; the next 9 inches is gray sandy clay loam and has common fine streaks and pockets of white calcium carbonate; and the lower 22 inches is gray sandy clay loam and has common fine streaks and pockets of white calcium carbonate.

Available water capacity is high in the upper 13 inches and medium to high below. Permeability is moderately slow in the upper 13 inches and slow below. Organic-matter content is high in the upper 13 inches. Natural fertility is high.

Bluff soils are poorly suited to cultivated crops. Under natural conditions, they are poorly suited to improved pasture. If water is properly controlled and the soil is well managed, however, they are suited to improved clover-grass pasture.

Representative profile of Bluff sandy clay, 200 feet south of State Road 40, one-fourth mile west of Oklawaha River, just west of the boat basin, NE¼SW¼ sec. 3, T. 15 S., R. 23 E.

A11—0 to 6 inches; black (N 2/0) sandy clay; weak medium subangular blocky structure; firm, hard; few fine and medium roots; strongly acid; clear wavy boundary.

A12—6 to 13 inches; black (10YR 2/1) sandy clay loam; weak medium subangular blocky structure; firm, hard; few fine and medium roots; strongly acid; clear wavy boundary.

A13—13 to 17 inches; very dark gray (N 3/0) sandy clay; weak medium subangular blocky structure; very firm, very plastic and sticky, hard; few fine roots; few slickensides; slightly acid; clear wavy boundary.

B21g—17 to 29 inches; dark gray (N 4/0) sandy clay; few medium distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; very firm, very sticky and plastic, hard; few medium distinct slickensides; few medium white (N 8/0) streaks and pockets of white (N 8/0) calcium carbonate; neutral; clear wavy boundary.

B22g—29 to 38 inches; gray (N 5/0) sandy clay loam; common fine distinct yellowish brown (10YR 5/6) mottles; moderate medium subangular blocky structure; very firm, sticky and plastic, hard; few fine and medium slickensides; common fine streaks and pockets of soft and hard white (N 8/0) calcium carbonate; neutral; clear wavy boundary.

B3g—38 to 60 inches; gray (N 6/0) sandy clay; common medium distinct strong brown (7.5YR 5/6) and few medium distinct very pale brown (10YR 7/4) mottles; weak fine subangular blocky structure; firm, sticky and plastic; few to common lenses of sandy clay and sandy loam; few slickensides; common fine streaks and pockets of white (N 8/0) calcium carbonate; mildly alkaline.

The solum ranges from 40 to 60 inches or more in thickness. Marl is commonly at a depth of more than 60 inches.

The A horizon is black (N 2/0, 10YR 2/1) to very dark gray (N 3/0, 10YR 3/1). It is sandy clay or sandy clay loam. Organic matter content is about 2 to 12 percent in most pedons, but ranges to 20 percent. Reaction in the A horizon ranges from strongly acid to neutral. Thickness is 14 to 24 inches.

The Bg horizon is sandy clay loam or sandy clay. It ranges from slightly acid to moderately alkaline. Streaks and pockets of calcium carbonate are commonly within a depth of 17 to 42 inches. They generally increase in abundance with increasing depth. The Bg horizon is dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 6/0; 10YR 5/1, 6/1), or light gray (10YR 7/1, 7/2; N 7/0) and is 22 to 40 or more inches thick. Mottles in shades of gray, yellow, and brown are common in the B2g and B3g horizons.

The Cg horizon, if it occurs, is mixed gray (N 5/0, 6/0; 10YR 5/1, 6/1) and light gray (N 7/0, 10YR 7/1) sandy clay loam or sandy clay. It has few to many pockets of soft calcium carbonate and common large pockets of coarser of finer textured material. Reaction is mildly or moderately alkaline.

Bluff soils are associated with Anclote, Paisley, Okeechobee, Terra Ceia, and Tomoka soils. They are finer textured than Anclote soils. They are more poorly drained than Paisley soils and do not have the A2 horizon typical of those soils. They are mineral, whereas Okeechobee, Terra Ceia, and Tomoka soils are organic.

**Bf—Bluff sandy clay.** This is a very poorly drained soil that occurs as large and small areas along the flood plain of the Oklawaha River. Slopes are 0 to 2 percent. The water table is within a depth of 10 inches for more than 6 months during most years, and the surface is usually flooded for a period of 1 month or more annually.

Included with this soil in mapping are small areas, of similar soils, where the surface layer is sandy loam or the subsoil is sandy clay and small areas of Anclote, Paisley, Terra Ceia, and Tomoka soils. Also included is a 400-acre area of a very poorly drained, nonacid soil that is 45 to 60 percent silt and 18 to 30 percent clay and ranges from silt loam to silty clay loam. The position of this included soil on the landscape, the plant cover, and the required management are similar to those of Bluff sandy clay. Included soils make up less than 25 percent of the unit.

The natural vegetation is chiefly a swamp hardwood growth of oak, maple, gum, cypress, and palm. In some areas it is a mixture of swamp hardwood and loblolly pine. All areas are still in natural vegetation. Capability unit Vw–1; woodland group 2w3.

## Boardman Series

The Boardman series consists of sloping to strongly sloping, poorly drained soils that formed in moderately thick beds of loamy and clayey marine sediments. These soils are on seepy hillsides of the upland. Hillside seepage raises the water table to within 10 inches of the surface for 1 month to 4 months during most years.

In a representative profile the surface layer is about 5 inches of very dark gray loamy sand that is 11 percent gravel. The subsurface layer is about 11 inches of gray loamy sand that is 25 percent gravel. The subsoil extends to a depth of 56 inches. The upper 6 inches is gray sandy loam that is 17 percent gravel; the next 12 inches is mottled gray sandy clay loam that is 6 percent gravel; and the lower 22 inches is mottled gray sandy clay that is 5 percent gravel in the upper 11 inches and less than 5 percent below. The underlying material to a depth of 68 inches is mottled gray clay.

Available water capacity is low in the upper 16 inches, low to medium from 16 to 22 inches, medium to high from 22 to 45 inches, and high below. Permeability is rapid in the upper 16 inches, moderate from 16 to 22 inches, moderately slow from 22 to 34 inches, and slow below. Natural fertility is medium. Organic-matter content in the surface layer is medium.

Boardman soils are poorly suited to most general farm crops. If the slope is less than 8 percent, they are moderately well suited to crops commonly grown in the area. They are well suited to improved pasture of locally grown grasses and legumes.

Representative profile of Boardman loamy sand, 5 to 8 percent slopes, in an improved pasture three-quarters of a mile west of Interstate Highway 75 and Dungarvin Road and 500 feet south of Dungarvin Road, NE¼SE¼ sec. 23, T. 12 S., R. 20 E.

Ap—0 to 5 inches; very dark gray (N 3/0) loamy sand; moderate medium granular structure; very friable; common fine roots; about 11 percent weathered phosphatic limestone gravel; medium acid; clear wavy boundary.

A2—5 to 16 inches; gray (10YR 5/1) loamy sand; moderate medium granular structure; very friable; few fine roots; about 25 percent weathered phosphatic limestone gravel; medium acid; gradual wavy boundary.

B21tg—16 to 22 inches; gray (10YR 5/1) sandy loam; weak fine subangular blocky structure; friable; few fine roots; about 17 percent weathered phosphatic limestone gravel; strongly acid; clear wavy boundary.

B22tg—22 to 34 inches; gray (10YR 5/1) sandy clay loam; few fine distinct very pale brown mottles; moderate medium subangular blocky structure; firm; few fine roots; thin discontinuous clay films on faces of peds; about 6 percent weathered phosphatic limestone gravel; strongly acid; clear wavy boundary.

B23tg—34 to 45 inches; gray (10YR 5/1) sandy clay; few fine and medium distinct white (10YR 8/1) and few fine distinct very pale brown mottles; moderate medium subangular blocky structure; firm; few fine roots; thin continuous clay films on faces of peds; about 5 percent weathered phosphatic limestone gravel; strongly acid; clear wavy boundary.

B3—45 to 56 inches; gray (N 6/0) sandy clay; common medium faint light gray (10YR 7/1) and few medium distinct very pale brown (10YR 7/3) mottles; weak fine subangular blocky structure; firm; few fine soft white (10YR 8/1) calcareous nodules about 2 millimeters in size; few fine weathered phosphatic pebbles; strongly acid; clear wavy boundary.

IICg—56 to 68 inches; gray (10YR 6/1) clay; few medium distinct greenish gray (5GY 6/1) and few fine and medium pale olive (5Y 6/3) mottles; massive; very firm; few fine white soft and hard limestone nodules 2 to 8 millimeters in size; few fine weathered phosphatic pebbles; strongly acid.

The solum is 50 to 74 inches thick. Reaction is mostly very strongly acid and strongly acid throughout, but is lower in the A horizon if the soil is limed. In the A and Btg horizons, the content of weathered fragments and pebbles ranges from 5 to 25 percent by volume. Below these horizons, the content of rock fragments or pebbles ranges from 0 to 25 percent. The content of ironstone pebbles ranges from 0 to 25 percent.

The A1 or Ap horizon is very dark gray (N 3/0, 10YR 3/1) or dark gray (N 4/0, 10YR 4/1) loamy sand 4 to 6 inches thick. The A2 horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1), light gray (10YR 7/1, 7/2), or light brownish gray (10YR 6/2) loamy sand 8 to 14 inches thick.

The B21tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or dark gray (N 4/0, 10YR 4/1) sandy loam 6 to 9 inches thick. In places it is mottled with yellow and brown. The B22tg and B23tg horizons have the same colors as the B21tg horizon, but are mottled with yellow, brown, and red. The B22tg horizon is sandy clay loam and is 10 to 14 inches thick. The B23tg is sandy clay loam or sandy clay and is about 10 to 16 inches thick. The B3g horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light gray (10YR 7/1) sandy clay or clay mottled with yellow, brown, or red. It is 10 to 16 inches thick.

The IICg horizon is mottled gray (10YR 5/1, 6/1) or light gray (10YR 7/1, 5Y 7/1, N 7/0) clay.

Boardman soils are closely associated with Blichton, Fellowship, Flemington, Micanopy, and Wacahoota soils. They are, by volume, 5 percent or more gravel and rock fragments, whereas Blichton, Fellowship, Flemington and Micanopy soils are less than 5 percent. They have a thinner A horizon than Blichton soils and are finer textured in the lower part of the Bg horizon. They have an A1 horizon that is less than 7 inches thick, whereas the A1 horizon of Fellowship soils is 10 inches or more thick. They are of siliceous mineralogy, whereas Flemington soils are of montmorillonitic mineralogy. They are more poorly drained than Micanopy soils and have a thinner A horizon than Wacahoota soils.

**BoC—Boardman loamy sand, 5 to 8 percent slopes.** This is a sloping, poorly drained soil on seepy hillsides in the upland. It has the profile described as representative of the series. Hillside seepage raises the water table to within 10 inches of the surface for 1 month to 4 months during most years. Surface runoff is rapid.

Included with this soil in mapping are a few small areas, of a similar soil, where the slope is 2 to 5 or 8 to 12 percent; small areas of Blichton, Fellowship, Flemington, Micanopy, and Wacahoota soils; a few small areas where the subsurface layer is gravelly and sandy and the subsoil is gravelly and loamy. Also included are a few areas, of a similar soil, where the content of gravel is less than 5 percent and a few small areas where the soil is moderately eroded. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is a forest of loblolly pine, slash pine, sweetgum, magnolia, hickory, oak, maple, and dogwood and an understory of chiefly waxmyrtle, native shrubs, and grasses. Most areas are uncleared. Most cleared areas are in improved pasture. Capability unit IVw-5; woodland group 2w1.

**BoD—Boardman loamy sand, 8 to 12 percent slopes.**

This is a strongly sloping, poorly drained soil of the upland. It occurs as short, sharp-breaking slopes and on long, seepy hillsides. Surface runoff is rapid. The erosion hazard is severe on unprotected slopes. Hillside seepage raises the water table to within 10 inches of the surface for 1 month to 4 months during most years.

Included with this soil in mapping are areas where the soil is similar to Blichton, Fellowship, Flemington, and Wacahoota soils on 8 to 12 percent slopes; small areas of a soil that is similar to this Boardman soil but the slope is 5 to 8 percent; and a few small areas where the subsurface layer is gravelly loamy sand and the subsoil is a gravelly loamy soil. Also included are a few small areas where the soil is moderately eroded. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is loblolly pine, slash pine, sweetgum, magnolia, and hickory and an understory of mainly waxmyrtle and native grasses. Most areas are still in natural vegetation. Most cleared areas are in improved pasture. Capability unit VIw-1; woodland group 2w1.

## Borrow Pits

**Bp—Borrow pits** are areas where soil has been excavated and used in road construction and as fill material in preparation of building sites. The areas vary in size, shape, and depth. Most excavations are small, but some are as large as 30 to 40 acres. Pits too small to delineate are identified by spot symbols on the soil map. The depth is generally about 5 to 12 feet. This mapping unit is of limited use other than as wildlife habitat and water areas. Capability unit VIIIs-1; not assigned to a woodland group.

## Candler Series

The Candler series consists of nearly level to strongly sloping, excessively drained soils that formed in thick beds of sandy marine deposits. These soils occur as broad areas of the sandy uplands. The water table is at a depth of more than 60 inches.

In a representative profile the surface layer is dark gray sand about 5 inches thick. It is underlain by 62 inches of yellow sand. The next 42 inches is very pale brown sand that is mottled with white and has thin lamellae of yellowish brown loamy sand. Below this is 6 inches of brownish yellow sandy loam.

Available water capacity is very low in the upper 67 inches, low from 67 to 109 inches, and medium below. Permeability is very rapid in the upper 67 inches, rapid from 67 to 109 inches, and moderately rapid below. Natural fertility is low. Organic-matter content is very low.

Candler soils have limited suitability for most general farm crops. If the climate is favorable, however, they are suited to special crops grown in the area, especially to citrus.

Representative profile of Candler sand, 0 to 5 percent slopes, in an undisturbed area where the natural vegetation is turkey oak and scattered longleaf pine, 200 feet west of Baseline Road, three-quarters of a mile north of Silver Springs, SE¼SE¼ sec. 36, T. 14 S., R. 22 E.

A1—0 to 5 inches; dark gray (10YR 4/1) sand; single grained; loose; few fine and medium roots; many uncoated and thinly coated sand grains; some mixing of light yellowish brown (10YR 6/4) in lower 1 inch to 1½ inches; strongly acid; clear wavy boundary.

A21—5 to 27 inches; yellow (10YR 7/6) sand; single grained; loose; few fine and medium roots; many uncoated sand grains; strongly acid; gradual wavy boundary.

A22—27 to 67 inches; yellow (10YR 7/8) sand; single grained; loose; few roots; many uncoated sand grains; strongly acid; clear wavy boundary.

A&B1—67 to 95 inches; very pale brown (10YR 7/4) sand; few fine and medium distinct white (10YR 8/2) mottles; single grained; loose; few roots; many uncoated sand grains; few very thin yellowish brown (10YR 5/8) loamy sand lamellae, 1 millimeter to 3 millimeters thick and 1 centimeter to 8 centimeters long, slightly increasing in abundance with depth; sand grains in lamellae well coated; strongly acid; gradual wavy boundary.

A&B2—95 to 109 inches; very pale brown (10YR 7/4) sand; few fine and medium distinct white (10YR 8/2) mottles; single grained; loose; many sand grains uncoated; yellowish brown (10YR 5/8) loamy sand lamellae, about 1 centimeter to 8 centimeters long and 3 to 8 millimeters thick, increasing in abundance with depth; sand grains in lamellae well coated; very strongly acid; clear wavy boundary.

B2t—109 to 115 inches; brownish yellow (10YR 6/6) sandy loam; moderate medium granular structure; friable; sand grains well coated; very strongly acid.

The solum is 80 inches or more thick. The content of silt and clay is less than 5 percent between depths of 10 and 40 inches. Reaction ranges from very strongly acid to medium acid in all horizons.

The A1 or Ap horizon is gray (10YR 5/1), grayish brown (10YR 5/2), dark gray (10YR 4/1, dark grayish brown (10YR 4/2), very dark gray (10YR 3/1), or very dark grayish brown (10YR 3/2) sand. It is 3 to 7 inches thick.

The A21 and A22 horizons are very pale brown (10YR 7/3, 7/4), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), yellow (10YR 7/6, 7/8, 8/6, 8/8), brownish yellow (10YR 6/6, 6/8), yellowish brown (10YR 5/4, 5/6, 5/8), or reddish yellow (7.5YR 6/6, 6/8) sand 53 to 76 inches thick.

The A&B1 and A&B2 horizons are light brownish gray (10YR 6/2), very pale brown (10YR 7/3, 7/4, 8/4), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), brownish yellow (10YR 6/6), or yellow (10YR 7/6, 7/8, 8/6, 8/8 )sand or fine sand. Few to common small, medium, and large pockets of light gray (10YR 7/1, 7/2) and white (10YR 8/1, 8/2) clean sand grains are in many pedons. The A&B1 and A&B2 horizons have lamellae of brownish yellow (10YR 6/6, 6/8), yellowish brown (10YR 5/6, 5/8), or strong brown (7.5YR 5/6, 5/8) loamy sand, loamy fine sand, or sandy loam. Depth to the lamellae is commonly below 60 to 80 inches, but ranges from 50 to 80 inches. The lamellae range from about 1 millimeter to 1 centimeter thick. Total thickness of the lamellae is 1 inch to 6 inches with a depth of 80 inches. The A part of the A&B1 and A&B2 horizons, which is between the lamellae, ranges from 2 to 8 inches in thickness.

In some pedons few to common small and large pockets of light gray are in the A2 and the A&B horizons.

The B2t horizon is yellow (10YR 7/6, 7/8), brownish yellow (10YR 6/6, 6/8), yellowish brown (10YR 5/4, 5/6, 5/8), strong brown (7.5YR 5/6, 5/8), or yellowish red (5YR 5/6, 5/8) sandy loam or sandy clay loam. In a few pedons it is loamy sand. It is at a depth of 85 to 135 inches.

In places the upper 10 to 20 inches is clayey mine wash from the mining of phosphate.

Candler soils are associated with Apopka, Astatula, Arredondo, Adamsville, Pompano, and Tavares soils. They are sandy to a depth of more than 80 inches, whereas Apopka soils are sandy clay loam below a depth of 40 to 80 inches and Arredondo soils are sandy to a depth of 40 to 80 inches. They are better drained than Adamsville, Pompano, and Tavares soils. They have a slightly thicker A horizon than Astatula soils and are darker colored.

**CaB—Candler sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, excessively drained sandy soil that has thin lamellae of loamy sand within a depth of 60 to 80 inches. It occurs as small and large areas on sandy ridges in the uplands. It has the profile described as representative of the series. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas of Arredondo, Apopka, Astatula, Adamsville, and Tavares soils. Also included are small areas of a similar soil having no thin lamellae of loamy sand and a few areas of a similar soil having a slope of 5 to 12 percent. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is turkey oak, bluejack oak, post oak, sand live oak, and longleaf pine and an understory of mostly pineland three-awn and, in some open areas, lichens. Most are still in native vegetation. Most cleared areas are in citrus and improved pasture. Capability unit IVs–1; woodland group 4s1.

**CaC—Candler sand, 5 to 12 percent slopes.** This is a sloping to strongly sloping, excessively drained sandy soil that has thin lamellae of loamy sand within a depth of 60 to 80 inches. It occurs as small and large areas on sandy ridges in the uplands. The hazard of erosion is slight during periods of high rainfall. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas of Apopka, Arredondo, Tavares, Adamsville, and Pompano soils. Also included are spots, of a similar soil, where the slope is 0 to 5 percent and small areas of a similar soil having no thin lamellae of loamy sand. Included soils make up about 20 percent of any one mapped area.

The native vegetation is turkey oak, bluejack oak, post oak, and scattered longleaf pine and a sparse understory of pineland three-awn and lichens. The largest acreage is still in native vegetation. Most cleared areas are in citrus or improved pasture. Capability unit VIs–2; woodland group 4s1.

**CwA—Candler clay, overwash, 0 to 2 percent slopes.** This is a nearly level, well drained soil that generally occurs as small areas along the lower parts of slopes and in slight depressions in the uplands of the southwestern part of the survey area. It has a profile similar to the one described as representative of the series, but the upper 10 to 20 inches is mixed clayey mine wash from the mining of phosphate. The water table is at a depth of more than 72 inches.

Available water capacity is high in the clayey material, very low in the sandy material to a depth of about 78 inches, and low below. Permeability is slow in the clayey material, very rapid in the sandy material to a depth of about 78 inches, and rapid below. Natural fertility is medium in the clayey material and low in the sandy material. Organic-matter content is low.

Included with this soil in mapping are about 30 acres, of a similar soil, where the mine wash is 20 to 36 inches deep over the sandy soil, small areas where the mine wash in only 3 to 10 inches deep, and small areas where the water table is within a depth of 72 inches. Also included is about 10 acres where 20 to 30 inches of mine wash overlies a poorly drained sandy soil that has a loamy subsoil. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is post oak, live oak, water oak, slash pine, and longleaf pine and an understory of sedges, briers, and native grasses. Most areas are in native vegetation. A few are cleared and are in improved pasture. Capability unit VIs–2; woodland group 4s1.

## Eaton Series

The Eaton series consists of nearly level, poorly drained soils that formed in thick beds of sandy and clayey marine sediments. These soils occur as broad areas of the flatwoods. The water table is within a depth of 10 inches for 2 to 4 months during most years.

In a representative profile the surface layer is dark gray loamy sand about 6 inches thick. The subsurface layer is gray loamy sand about 24 inches thick. The subsoil extends to a depth of 78 inches. The upper 3 inches is mottled gray sandy clay loam, and the lower 45 inches is mottled gray sandy clay. The underlying material to a depth of 92 inches is mottled gray sandy clay that has pockets of light gray loamy sand.

Available water capacity is low in the upper 30 inches and medium to high below. Permeability is rapid in the upper 30 inches, slow to about 78 inches, and moderately slow below. Natural fertility is medium, and organic-matter content is low.

Under natural conditions, Eaton soils are poorly suited to cultivated crops. If water is properly controlled, however, they are well suited to special crops grown in the area and to improved pasture of locally grown grasses and legumes.

Representative profile of Eaton loamy sand, in an undisturbed area where the plant cover is slash pine, bluestems, palmetto, gallberry, myrtle, briers, and wiregrass; 2.5 miles east of State Road 315, 150 feet east of Gores Landing Road, NE¼SE¼ sec. 6, T. 14 S., R. 24 E.

A1—0 to 6 inches; dark gray (10YR 4/1) loamy sand; moderate medium granular structure; very friable; common fine and few medium roots; very strongly acid; abrupt smooth boundary.

A2—6 to 30 inches; gray (10YR 6/1) loamy sand; few medium faint white (10YR 8/1) mottles in the lower 10 inches; single grained; loose; few fine and medium roots; strongly acid; abrupt wavy boundary.

B21tg—30 to 33 inches; gray (N 5/0) sandy clay loam; common fine distinct strong brown and few fine prominent red mottles; moderate fine subangular blocky structure; firm, sticky and plastic; few fine roots; few root channels; few thin discontinuous clay films on ped faces; very strongly acid; clear wavy boundary.

B22tg—33 to 64 inches; gray (N 5/0) sandy clay; common fine and medium prominent red (10YR 4/8) and common medium distinct reddish yellow (7.5YR 6/8) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; few fine roots; few root channels; few fine faint gray pockets of sandy clay loam; distinct clay films on ped faces; few slickensides; very strongly acid; clear wavy boundary.

B23tg—64 to 78 inches; gray (10YR 6/1) and light gray (10YR 7/1) sandy clay; few fine distinct yellowish brown, few fine faint very pale brown, few medium distinct strong brown (7.5YR 5/8), and few medium prominent red (10R 4/8) mottles; weak medium subangular blocky structure; firm, sticky and plastic; few fine roots; few root channels; few faint discontinuous clay films on ped faces; few slickensides; very strongly acid; clear wavy boundary.

Cg—78 to 92 inches; gray (10YR 5/1) sandy clay; common fine prominent red and few medium prominent yellowish red (5YR 5/8) mottles; massive; firm, sticky and plastic; few fine roots and root channels; large pockets of light gray (10YR 7/1) loamy sand; few faint clay films; few slickensides; very strongly acid.

The solum is 60 inches or more thick.

The A1 horizon is black (10YR 2/1, N 2/0), very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0, 10YR 4/1), dark grayish brown (10YR 4/2), or gray (N 5/ , 10YR 5/1). It is 4 to 8 inches thick. If black or very dark gray, it is less than 6 inches thick. The A2 horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light gray (N 7/0; 10YR 7/1, 7/2; 2.5Y 7/2) and in places is mottled with brown, red, or yellow. It is 16 to 32 inches thick. Reaction is very strongly acid to strongly acid.

The B21tg is gray (N 5/0, 6/1; 10YR 5/1, 6/1) sandy clay loam 1 inch to 3 inches thick. In some pedons this horizon does not occur. The B22tg and B23tg horizons and, if it occurs, the B24tg horizon are gray (N 5/0, 6/0; 10YR 5/1, 6/1) or dark gray (N 4/0, 10YR 4/1) sandy clay or clay mottled with yellow, brown, and red. Total thickness of these horizons is 33 to 45 inches or more. Reaction ranges from very strongly acid to medium acid.

The Cg horizon is gray (N 5/0; N 6/0; 10YR 5/1, 6/1) or light gray (N 7/0, 10YR 7/1) sandy clay mottled with gray, brown, yellow, and red. In places it has pockets of sand, fine sand, or loamy sand. Reaction ranges from very strongly acid to medium acid.

Eaton soils are closely associated with Eureka, Martel, and Lynne soils. They have a thicker A horizon than Eureka and Martel soils. They have higher base saturation than Lynne soils and do not have the Bh horizon characteristic of those soils.

**Ea—Eaton loamy sand.** This is a poorly drained soil that occurs in broad areas of the flatwoods. Slopes are 0 to 2 percent. The water table is within a depth of 10 inches for 2 to 4 months during most years.

Included with this soil in mapping are small areas, of a similar soil, where the surface layer is fine sand and a few small areas of a poorly drained, strongly acid soil that has a fine sand surface layer 20 to 40 inches deep over a sandy clay subsoil. Also included are small areas of Eureka, Martel, and Lynne soils. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is dominantly a forest of slash pine and loblolly pine. In some areas the forest is a mixture of pine, oak, and gum. The understory is waxmyrtle, scattered bluestems and saw-palmetto, gallberry, and native grasses. Capability unit IIIw-3; woodland group 2w2.

## Electra Series

The Electra series consists of nearly level to gently sloping, somewhat poorly drained sandy soils that formed in thick beds of sandy and loamy marine sediments. These soils occur in the flatwoods and in the sandy areas of the uplands. The water table fluctuates between 24 and 40 inches for cumulative periods of 4 months during most years, but recedes to a depth of more than 40 inches during drier periods.

In a representative profile the surface layer is gray sand about 4 inches thick. Next, in sequence downward, is 13 inches of light gray sand; 24 inches of white sand streaked with grayish brown; 4 inches of black, weakly cemented sand that is well coated with organic matter; 5 inches of dark reddish brown, weakly cemented sand that is mottled with black and dark brown and is well coated with organic matter; 4 inches of brown sand; and 6 inches of mottled light brownish gray and pale brown sandy clay loam. Below the sandy clay loam is 12 inches of mottled gray light sandy clay.

Available water capacity is very low to low in the upper 41 inches, medium from 41 to 50 inches, low from 50 to 54 inches, and medium below. Permeability is very rapid in the upper 41 inches, moderate from 41 to 50 inches, rapid from 50 to 54 inches, and moderately slow below. Natural fertility is low. Organic-matter content is very low.

Electra soils are not suited to general farm crops and are poorly suited to improved pasture.

Representative profile of Electra sand, 0 to 5 percent slopes, about 6 miles north of Fort McCoy on State Road 315, 1.4 miles west on graded road (Sugar Road) and about 100 feet south, NE¼NE¼ sec. 21, T. 12 S., R. 23 E.

A1—0 to 4 inches; gray (10YR 5/1) sand; weak fine granular structure; very friable; common fine and medium roots; very strongly acid; clear wavy boundary.

A21—4 to 17 inches; light gray (10YR 7/1) sand; few fine distinct grayish brown streaks along root channels; single grained; loose; common fine and medium roots; clean sand grains; very strongly acid; clear wavy boundary.

A22—17 to 41 inches; white (10YR 8/1) sand; few fine distinct thin streaks of grayish brown along root channels; single grained; loose; few fine and medium roots; clean sand grains; very strongly acid; abrupt wavy boundary.

B21h—41 to 45 inches; black (5YR 2/1) sand; few medium faint dark reddish brown (5YR 2/2) streaks; weak medium subangular blocky structure; weakly cemented; few fine roots; sand grains well coated with organic matter; very strongly acid; clear wavy boundary.

B22h—45 to 50 inches; dark reddish brown (5YR 3/2) sand; few medium faint black (5YR 2/1) and few medium faint dark brown (7.5YR 3/2) streaks; weak medium subangular blocky structure; weakly cemented; few fine roots; sand grains well coated with organic matter; very strongly acid; clear wavy boundary.

A′2—50 to 54 inches; brown (10YR 5/3) sand; single grained; loose; few roots; very strongly acid; clear wavy boundary.

B′21tg—54 to 60 inches; mottled light brownish gray (2.5Y 6/2) and very pale brown (10YR 7/3) sandy clay loam; few fine prominent yellowish red and common fine and medium faint gray (10YR 6/1) mottles; weak fine subangular blocky structure; friable; few discontinuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B′22tg—60 to 72 inches; gray (10YR 5/1) light sandy clay; few fine and medium prominent red (10R 4/8), few fine prominent yellowish red, and few fine and medium distinct light yellowish brown (10YR 6/4) mottles; moderate medium subangular blocky structure; firm; distinct discontinuous clay films on faces of peds; very strongly acid.

The solum is 60 inches or more thick. Reaction ranges from extremely acid to strongly acid in all horizons.

The A horizon is 30 to 50 inches thick. The A1 horizon is dark gray (N 4/0, 10YR 4/1) or gray (N 5/0, 6/0; 10YR 5/1, 6/1) sand. It is 2 to 8 inches thick. The A2 horizon is light gray (10YR 7/1, 7/2) or white (10YR 8/1, 8/2) sand. It is 28 to 45 inches thick. Most of the sand grains in the A2 horizon are clean.

In some pedons a 1- to 2-inch transitional layer occurs between the A2 and B2h horizons. The B2h horizon is black (N 2/0, 5YR 2/1, 10YR 2/1), very dark gray (5YR 3/1), dark reddish brown (5YR 2/2, 3/2, 3/3), dark brown (7.5 YR 3/2), or very dark brown (10YR 2/2) sand or fine sand. It is 7 to 18 inches thick.

The B3 horizon, if it occurs, is dark brown (10YR 3/3, 4/3, 7.5YR 4/2, 4/4) or dark yellowish brown (10YR 4/4) sand or fine sand. It is 0 to 5 inches thick.

The A′2 horizon is light gray (10YR 7/2), pale brown (10YR 6/3), very pale brown (10YR 7/3, 7/4), or brown (10YR 5/3) sand. It is 3 to 10 inches thick.

Depth to the B′tg horizon is generally 40 to 70 inches, but ranges to 80 inches. It is gray (10YR 5/1, 6/1), light brownish, gray (2.5Y 6/2, 10YR 6/2), very pale brown (10YR 7/3, 7/4, 8/3), pale yellow (2.5Y 7/4), or pale brown (10YR 6/3) and is mottled with gray, yellow, red, or brown. The B′tg horizon is dominantly sandy clay loam, but in a few pedons ranges to sandy loam or sandy clay. It is 12 to 20 inches or more thick.

The B′3g horizon, if it occurs, is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light gray (10YR 7/1) sandy clay mottled with colors of higher chroma.

Electra soils are associated with Astatula, Candler, Lynne, Placid, and Pomona soils. They are more poorly drained than Astatula and Candler soils and are better drained than Placid soils. They also differ from Astatula, Candler, and Placid soils in having a Bh horizon and from Placid soils in having an A2 horizon.

**EcB—Electra sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, somewhat poorly drained soil that occurs as small and large areas in the flatwoods and the sandy uplands. The water table fluctuates between 25 to 40 inches for cumulative periods of 4 months during most years, but recedes to a depth of more than 40 inches during drier periods.

Included with this soil in mapping are small areas, of a similar soil, where the texture is fine sand and a few small areas of a soil having a slope of 5 to 8 percent. Also included are small areas of Astatula, Candler, Lynne, Placid, and Pomona soils. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is chiefly sand live oak, longleaf pine, sand pine, myrtle, saw-palmetto, and native grasses. Scattered slash pine grow in some areas. Most areas are still in natural vegetation. Only a few small areas are cleared and are in pasture or citrus. Capability unit VIs-3; woodland group 4s1.

## Eureka Series

The Eureka series consists of nearly level, poorly drained to very poorly drained soils that formed in thick beds of clayey marine sediments. These soils occur as low, broad areas of the flatwoods. The water table is within 10 inches of the surface for 2 to more than 6 months during most years. Depressed areas are covered with water for more than 4 months annually.

In a representative profile the surface layer is very dark gray loamy fine sand about 5 inches thick. The subsurface layer is grayish brown loamy fine sand about 8 inches thick. The subsoil extends to a depth of 81 inches. The upper 56 inches is gray, firm sandy clay mottled with brown and red, and the lower 12 inches is mottled gray, firm sandy clay mixed with fine lenses of sandy loam and loamy sand.

Available water capacity is medium in the upper 13 inches and high below. Permeability is moderately rapid in the upper 13 inches and slow to very slow below. Natural fertility is medium. Organic-matter content of the surface layer is moderately low.

Under natural conditions, Eureka soils are poorly suited to cultivated crops. Water control is needed before the soils can be successfully cultivated, and crops are limited to those that can tolerate slightly wet conditions. The soils are well suited to improved pasture.

Representative profile of Eureka loamy fine sand, in an undisturbed area where the plant cover is loblolly pine, bluestems, palmetto, myrtle, scattered live oak, briers, and wiregrass; 150 feet east of State Road 315 and 1½ miles north of its intersection with State Road 40, NE¼NE¼ sec. 33, T. 14 S., R. 23 E.

A1—0 to 5 inches; very dark gray (N 3/0) loamy fine sand; moderate medium and coarse granular structure; friable; few fine and medium roots; very strongly acid; clear wavy boundary.

A2—5 to 13 inches; grayish brown (10YR 5/2) loamy fine sand; moderate medium granular structure; few fine and medium roots; very strongly acid; abrupt wavy boundary.

B21tg—13 to 17 inches; gray (10YR 5/1) sandy clay; few fine distinct strong brown and few fine prominent red mottles; moderate medium subangular blocky structure; firm, sticky and plastic; few fine roots; few distinct clay films along ped faces and clay flows along few root channels; very strongly acid; clear wavy boundary.

B22tg—17 to 28 inches; gray (N 5/0) sandy clay; few fine and medium prominent red (10R 4/8) and few fine distinct strong brown mottles; moderate medium subangular blocky structure; firm, sticky and plastic; few fine roots; distinct clay films on ped faces and few clay flows along root channels; few slickensides; very strongly acid; gradual wavy boundary.

B23tg—28 to 69 inches; gray (10YR 5/1) sandy clay; few fine and medium prominent red (10R 4/8) and common medium distinct strong brown (7.5YR 5/8) mottles; moderate medium subangular blocky structure; firm, sticky and plastic; very few fine roots; distinct clay films on ped faces; slickensides; very strongly acid; gradual wavy boundary.

B3g—69 to 81 inches; gray (N 5/0) sandy clay; common medium prominent red (10R 4/8) and few fine and medium strong brown (7.5YR 5/8) mottles; few fine faint light brownish gray lenses of sandy loam and loamy sand; weak medium subangular blocky structure; firm, sticky and plastic; few fine roots; few discontinuous clay films along ped faces; slickensides; very strongly acid.

The solum is 60 inches or more thick. Reaction is very strongly acid to strongly acid in all horizons.

The A horizon is loamy fine sand. It is centered on 5 to 14 inches in thickness, but ranges to 20 inches.

The A1 or Ap horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10YR 3/1), and dark gray (N 4/0, 10YR 4/1). It is 3 to 7 inches thick. If black or very dark gray, it is less than 6 inches thick. The Ap horizon is dark gray or grayish brown when crushed and rubbed.

The A2 horizon is dark gray (10YR 4/1, N 4/0), gray (N 5/0, 6/0; 10YR 5/1, 6/1), grayish brown (10YR 5/2, 2.5Y 5/2), or light brownish gray (10YR 6/2, 2.5Y 6/2) and in places has few to common mottles in shades of gray, yellow, and brown. It is 3 to 9 inches thick. There is an abrupt textural change between the A2 and B2tg horizons.

The B2tg is gray (N 5/0, 10YR 5/1), dark gray (10YR 4/1, N 4/0), or light gray (10YR 6/1, 2.5Y 7/2) and is mottled with yellow, brown, and red. It is sandy clay or clay and is 40 to 58 inches thick.

The B3g horizon is dark gray (N 4/0, 10YR 6/1) or gray (N 5/0, 6/0; 10YR 5/1, 6/1) and is mottled with gray, yellow, brown, and red. It is sandy clay or clay. Some pedons have fine lenses and pockets of coarser textured material.

Eureka soils are closely associated with Eaton, Lynne, Martel, and Paisley soils. They have a thinner A horizon than Eaton soils. They do not have the Bh horizon characteristic of Lynne soils. They are of mixed mineralogy and have an A2 horizon, whereas Martel soils are of montmorillonitic mineralogy and have no A2 horizon. They are more acid than Paisley soils.

**Er—Eureka loamy fine sand.** This is a poorly drained soil that occurs as small and large areas in the flatwoods. It has the profile described as representative of the series. Slopes are 0 to 2 percent. The water table is within a depth of 10 inches for 2 to 6 months during most years. Runoff is very slow.

Included with this soil in mapping are small areas of Eaton, Paisley, and Martel soils and small areas, of a similar soil, where the upper 2 to 5 inches of the subsoil is very pale brown and pale brown sandy clay. Also included are small areas of a similar soil having a surface layer of fine sandy loam. Included soils make up about 15 percent of any one mapped area.

Most areas are still in a forest of slash pine and loblolly pine and an understory of waxmyrtle, bluestems, palmetto, briers, gallberry, and native grasses. A few areas are cleared and are in improved pasture. Capability unit IIIw-6; woodland group 2w2.

**Es—Eureka loamy fine sand, ponded.** This is a very poorly drained soil in small depressions in the flatwoods. Slopes are 0 to 2 percent. This soil is similar to Eureka loamy fine sand, but the water table is within a depth of 10 inches for more than 6 months during most years and the surface is ponded for more than 4 months annually.

Included with this soil in mapping are small areas of Martel, Eaton, and other Eureka soils. Also included are spots, of a similar soil, where the surface layer is sandy loam. Included soils make up less than 15 percent of any one mapped area.

Most areas are still in a natural vegetation of cypress, slash pine, gum, and water-tolerant grasses. Capability unit VIIw-1; woodland group 2w3.

## Fellowship Series

The Fellowship series consists of gently sloping to sloping, poorly drained soils that formed in thick beds of clayey marine sediments. These soils occur in the upland as broad undulating areas interspersed with sinkholes and rock outcrop. The water table is perched in the surface layer and the upper part of the subsoil. It is within 10 inches of the surface for 1 month to 4 months during wet seasons. Wet slopes are the result of hillside seepage.

In a representative profile the surface layer is about 18 inches thick. The upper 11 inches is black loamy sand, and the lower 7 inches is dark gray sandy loam. The subsoil extends to a depth of 42 inches. The upper 7 inches is mottled gray sandy clay loam, the next 7 inches is mottled gray sandy clay, and the lower 10 inches is mottled gray clay. The underlying material to a depth of 83 inches is clay. The upper 20 inches is light gray mottled with pale yellow, and the lower 21 inches is light greenish gray mottled with yellowish brown and gray.

Available water capacity is low to medium in the upper 11 inches, medium from 11 to about 18 inches, and high below. Natural fertility is medium. Permeability is moderately rapid in the upper 11 inches, moderate from 11 to 18 inches, slow from 18 to 25 inches, and very slow below. Organic-matter content of the surface layer is medium.

Fellowship soils are moderately well suited to cultivated crops commonly grown in the area. They are well suited to improved pasture of locally grown grasses and legumes.

Representative profile of Fellowship loamy sand, 2 to 5 percent slopes, in an undisturbed wooded area 1.7 miles north of Flemington at intersection of State Road 321 and Dungarvin Road, 0.1 mile east of intersection and 200 feet south, NW1/4NW1/4 sec. 22, T. 12 S., R. 20 E.

A11—0 to 11 inches; black (N 2/0) loamy sand; moderate medium and coarse granular structure; very friable; common fine and medium roots; about 17 percent gravel or weathered and leached phosphatic rock fragments less than 3 inches in diameter; very strongly acid; clear wavy boundary.

A12—11 to 18 inches; dark gray (10YR 4/1) sandy loam; weak medium granular and weak fine subangular blocky structure; very friable; few fine and medium roots; about 6 percent gravel or weathered and leached phosphatic rock fragments less than 3 inches in diameter; very strongly acid; clear wavy boundary.

B21tg—18 to 25 inches; gray (N 5/0) sandy clay loam; common fine distinct yellowish brown mottles; moderate medium angular and subangular blocky structure; firm, slightly plastic and sticky, hard; few fine roots; discontinuous clay films along ped faces; about 15 percent gravel or weathered and leached phosphatic rock fragments less than 3 inches in diameter; very strongly acid; gradual wavy boundary.

B22tg—25 to 32 inches; gray (N 5/0) sandy clay; few to common fine distinct yellowish brown mottles; moderate medium subangular blocky structure; firm, plastic and sticky, hard; very few fine roots; prominent clay films along ped faces; about 11 percent gravel or weathered and leached phosphatic rock fragments less than 3 inches in diameter; very strongly acid; clear wavy boundary.

B23tg—32 to 42 inches; gray (N 6/0) clay; few medium prominent strong brown (7.5YR 5/8) and few medium prominent yellowish red (5YR 4/6) mottles; moderate angular and subangular blocky structure; firm, very sticky and plastic, hard; fine and medium roots; clay films along ped faces; few slickensides; about 5 percent gravel or weathered and leached phosphatic rock fragments less than 2 inches in diameter; very strongly acid; clear wavy boundary.

IIC1g—42 to 62 inches; light gray (10YR 7/1) clay; common fine distinct pale yellow mottles; massive; very firm, very sticky and plastic, hard; few partly decayed roots; common slickensides; strongly acid; gradual wavy boundary.

IIC2g—62 to 83 inches; light greenish gray (5GY 7/1) clay; common fine distinct yellowish brown mottles; few fine gray streaks in some root channels; massive; very firm, very sticky and plastic, hard; strongly acid; gradual wavy boundary.

The solum is less than 60 inches thick, generally ranging from about 42 to 58 inches. Reaction ranges from very strongly acid to medium acid in all horizons. Iron pebbles and gravel or fragments of leached phosphatic rock less than 3 inches in diameter are, by volume, 5 to 20 percent of the solum.

The A horizon is less than 20 inches thick. The A1 or A11 horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10YR 3/1), or very dark grayish brown (10YR 3/2 and is 10 to 14 inches thick. The A12 horizon is dark gray (N 4/0, 10YR 4/1) or gray (N 5/0, 10YR 5/1) sandy loam and is 0 to 7 inches thick.

The Btg horizon is dark gray (N 4/0, 10YR 4/1, gray (N 5/0, 6/0; 5Y 5/1, 6/1; 10YR 5/1, 6/1), or light gray (10YR 7/1, 7/2) and has few to common mottles in various shades of yellow, brown, and red. The upper 20 inches of the Btg horizon is, by weighted average, 35 to 45 percent clay and less than 20 percent silt. The B21tg horizon is sandy clay loam or sandy clay 3 to 7 inches thick. The B22tg horizon is sandy clay or clay 7 to 18 inches thick. The B23tg horizon is sandy clay or clay 10 to 16 inches thick.

A Blg horizon is in some pedons. It is sandy loam and has the same color range as the Btg horizon. The B3g horizon, if it occurs, is gray (N 5/1, 6/0, 5Y 5/1, 6/1, 10YR 5/1, 6/1) or light gray (10YR 7/1, 7/2) sandy clay or clay. It is 6 to 13 inches thick.

The IICg horizon is gray (10YR 5/1, 6/1; 5Y 6/1; N 5/0, 6/0), light gray (5Y 7/1, 7/2), olive gray (5Y 5/2), light olive gray (5Y 6/2), or light greenish gray (5GY 7/1). It has a few mottles. The texture is clay; the clay content averages more than 50 percent.

Fellowship soils are closely associated with Blichton, Flemington, Micanopy, and Zuber soils. They have a thicker A1 horizon than those soils. They do not have the A2 horizon characteristic of Blichton soils and are finer textured in the Btg horizon. They are more poorly drained than Micanopy and Zuber soils.

**FeB—Fellowship loamy sand, 2 to 5 percent slopes.** This is a gently sloping, poorly drained soil that occurs as small areas in the upland. It has the profile described as representative of the series. The upper 42 inches is, by volume, about 5 percent hard pebbles and gravel or fragments of leached phosphatic rock less than 3 inches in diameter. The water table is perched in the surface layer and the upper part of the subsoil. It is within 10 inches of the surface for about 1 month to 4 months during wet periods. Surface runoff is medium, and the hazard of erosion is moderate.

Included with this soil in mapping are a few small areas, of a similar soil, where the slope is 0 to 2 percent; a few areas, also of a similar soil, where it is 5 to 8 percent; a few small areas of moderately eroded soil; and small areas of Flemington, Blichton, and Micanopy soils. Also included are some areas of a similar soil that is, by volume, less than 5 percent gravel or rock fragments less than 3 inches in diameter and small areas where the soil is more than 20 percent gravel or rock fragments. Rock outcrop and sinkholes, both of which occur in many areas, are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, sweetgum, magnolia, hickory, oak, and holly and an understory of native shrubs and grasses. Only a few areas are cleared. Most of these are in improved pasture. Capability unit IIIw-2; woodland group 2w1.

**FeC—Fellowship loamy sand, 5 to 8 percent slopes.** This is a sloping, poorly drained soil on short, sharp-breaking slopes and long hillsides of the upland. It has a profile that is similar to the one described as representative of the series, but the surface layer is 1 inch to 3 inches thinner and the subsoil is slightly thinner. Surface runoff is rapid, and the hazard of erosion is severe. The soil ranges, by volume, from 5 to 20 percent gravel or rock fragments less than 3 inches in diameter. Wetness is caused by hillside seepage and the slowly permeable material, which severely restricts internal drainage. The water table is perched in the surface layer and the upper part of the subsoil. It is within 10 inches of the surface for about 1 month to 4 months during wet periods.

Included with this soil in mapping are small areas of a similar soil that is eroded; small areas of Flemington, Blichton, and Micanopy soils; and areas of a similar soil that is more than 35 percent gravel or phosphatic rock fragments. Also included are a few areas, of a similar soil, where the slope is 8 to 12 percent. Gullies have formed in a few cleared areas, and rock outcrop and sinkholes occur in many areas. The gullies, the rock outcrop, and the sinkholes are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

Most areas are still in a natural vegetation of slash pine, loblolly pine, sweetgum, magnolia, and hickory and an understory of mainly waxmyrtle and native grasses. Most cleared areas are in improved pasture. Capability unit IVw-5; woodland group 2w1.

## Fellowship Variant

The Fellowship variant consists of gently sloping to strongly sloping, poorly drained soils that formed in thick beds of clayey marine sediments. These soils are in the undulating uplands. They are interspersed with sinkholes and rock outcrop. In at least the upper 20 inches of the subsoil, they are, by volume, more than 35 percent pebbles and gravel or fragments of leached phosphatic rock less than 3 inches in diameter. The water table is perched in the surface layer and the upper part of the subsoil. It is within 10 inches of the surface for 1 month to 4 months during wet periods. Wet slopes are the result of hillside seepage.

In a representative profile the surface layer is black gravelly loamy sand about 14 inches thick. The subsoil extends to a depth of 43 inches. The upper 6 inches is dark gray gravelly sandy clay loam, the next 16 inches is gray gravelly sandy clay, and the lower 7 inches is gray sandy clay or clay that is less than 10 percent rock fragments. The underlying material to a depth of 70 inches is greenish gray clay.

Available water capacity is very low in the upper 14 inches, low from 14 to 36 inches, and medium to high below. Natural fertility is medium. Permeability is moderately rapid in the upper 14 inches, moderately slow between 14 and 20 inches, and very slow below. Organic-matter content in the surface layer is low to moderate.

The Fellowship variant is only fairly well suited to certain cultivated crops. It is moderately well suited to improved pasture of locally grown grasses and legumes.

Representative profile of Fellowship gravelly loamy sand, gravelly subsoil variant, 5 to 8 percent slopes, approximately 2.3 miles west of Anthony on northeast side of intersection of Anthony-Martin Road with U.S. Highways 301 and 441, SW¼SW¼ sec. 6, T. 14 S., R. 22 E.

A1—0 to 14 inches; black (N 2/0) gravelly loamy sand; moderate medium granular structure; very friable; few fine roots; about 45 percent pebbles and gravel or leached phosphatic rock fragments less than 3 inches in daimeter; few fragments more than 3 inches in diameter; very strongly acid; clear wavy boundary.

B21tg—14 to 20 inches; dark gray (N 4/0) gravelly sandy clay loam; weak medium subangular blocky structure; firm; few fine roots; few faint clay flows along faces of peds; about 45 percent gravel or leached phosphatic rock fragments and pebbles less than 3 inches in diameter, few fragments more than 3 inches in diameter; very strongly acid; clear wavy boundary.

B22tg—20 to 36 inches; gray (N 5/0) gravelly sandy clay or clay; moderate medium subangular blocky structure; firm; few fine roots; few discontinuous clay flows on faces of peds; few slickenslides; about 40 percent gravel or leached phosphatic rock fragments and pebbles less than 3 inches in diameter in the upper part, decreasing to about 36 percent in the lower 6 inches; very strongly acid; clear wavy boundary.

B3g—36 to 43 inches; gray (N 5/0) sandy clay or clay; few fine faint greenish gray and few common distinct pale yellow (5Y 7/4) mottles; weak medium subangular blocky structure; firm; few fine roots; slickensides; less than 10 percent gravel or rock fragments; very strongly acid; clear irregular boundary.

Cg—43 to 70 inches; light gray (5Y 7/1) or greenish gray (5GY 6/1) clay; few fine prominent yellowish red mottles; massive; very firm; few fine white concretions; slickensides; very strongly acid.

The solum is less than 60 inches thick, generally ranging from 38 to 48 inches. Reaction ranges from very strongly acid to medium acid in all horizons. The A horizon and at least the upper 20 inches of the Btg horizon are, by volume, 35 to about 60 percent iron concretions, phosphatic pebbles, and leached phosphatic rock fragments less than 3 inches in diameter. In many pedons, however, the solum is more than 35 percent gravel or fragments. Many pedons have a few rock fragments and boulders 6 to 30 inches in diameter at the surface and below. Limestone is below a depth of 60 inches.

The A1 horizon is black (N 2/0, 10YR 2/1) or very dark gray (N 3/0, 10YR 3/1) gravelly loamy fine sand. It is less than 20 inches thick, generally ranging from 11 to 14 inches.

The B21tg horizon is very dark gray (N 3/0, 10YR 3/1) or dark gray (N 4/0, 10YR 4/1) gravelly sandy loam or gravelly sandy clay. It is 6 to 8 inches thick. The B22tg horizon is dark gray (N 4/0, 10YR 4/1) to gray (N 5/0, 10YR 5/1, 5Y 5/1) gravelly sandy clay or gravelly clay. It is 15 to 18 inches thick. The B3g horizon is dark gray (N 4/0, 10YR 4/1) or gray (N 5/5, 6/0; 10YR 5/1, 6/1; 5Y 5/1, 6/1) sandy clay or clay 6 to 8 inches thick. In some pedons this horizon does not occur.

The Cg horizon is gray (N 6/0, 10YR 6/1, 5Y 6/1) to light gray (10YR 7/1, 7/2; 5Y 7/1, 7/2) clay.

The Fellowship variant is very closely associated with other Fellowship soils, but the upper 20 inches of the Btg horizon is, by volume, 35 percent or more gravel or leached phosphatic rock fragments. The variant is also associated with Blichton and Flemington soils. It has a thicker A1 horizon than Flemington soils and has more gravel or leached rock fragments in the Btg horizon. It also differs from Flemington soils in not having an A2 horizon. It has a finer textured Btg horizon than Blichton soils and contains more gravel or rock fragments.

**FgB—Fellowship gravelly loamy sand, gravelly subsoil variant, 2 to 5 percent slopes.** This is a gently sloping, poorly drained soil that occurs as small and large areas of the upland. Surface runoff is medium, and the hazard of erosion is moderate. The water table is perched in the surface layer and the upper part of the subsoil. It is within 10 inches of the surface for about 1 month to 4 months during wet periods.

Included with this soil in mapping are small areas, of a similar soil, where the sandy surface layer is more than 20 inches thick and areas, also of a similar soil, where the surface layer and the subsoil are less than 35 percent gravel. Also included are small areas of Flemington and Blichton soils and small areas of a similar soil that has a slope of 0 to 2 or 5 to 8 percent. Sinkholes and rock outcrop, both of which occur in many areas, are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, sweetgum, hickory, magnolia, and holly. Few areas are cleared. Most of these are in improved pasture. Capability unit IVw-4; woodland group 2w1.

**FgC—Fellowship gravelly loamy sand, gravelly subsoil variant, 5 to 8 percent slopes.** This is a sloping to strongly sloping, poorly drained soil that occurs as small and large areas on sharp-breaking slopes and long, wet hillsides of the upland. It has the profile described as representative of the variant. Wetness is caused by hillside seepage and the slowly permeable material, which severely restricts internal drainage. The water table is perched in the surface layer and the upper part of the subsoil. It is within 10 inches of the surface for 1 month to 4 months during wet periods. Surface runoff is rapid, and the hazard of erosion is severe.

Included with this soil in mapping are small areas, of similar soils, where the sandy surface layer is more than 20 inches thick or the surface layer and the subsoil are less than 35 percent gravel. Also included are small areas of Flemington and Blichton soils, small areas of a similar soil that has a slope of 2 to 5 percent, areas of a similar soil that is eroded, and a few small areas where limestone is within a depth of 52 to 60 inches. Sinkholes and rock outcrop, both of which occur in many areas, are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

Most areas are still in a natural vegetation of slash pine, loblolly pine, sweetgum, hickory, and magnolia and an understory of native shrubs and grasses. Some areas are in improved pasture. Capability unit VIw-1; woodland group 2w1.

## Flemington Series

The Flemington series consists of nearly level to gently sloping, poorly drained soils that formed in thick beds of fine textured marine sediments. These soils occur as small and large areas in the upland. The subsurface layer and the upper part of the subsoil are saturated with a perched water table for 1 month to 4 months during most years. Wet slopes are the result of hillside seepage.

In a representative profile the surface layer is very dark gray loamy sand about 5 inches thick. The subsurface layer is gray loamy sand about 4 inches thick. The subsoil, between depths of 9 and 53 inches, is clay. The upper 18 inches is dark gray mottled with strong brown, and the lower 26 inches is mottled gray. The underlying material to a depth of 75 inches is mottled light gray clay.

Available water capacity is low to medium in the upper 9 inches, medium from 9 to 27 inches, medium to high from 27 to 53 inches, and high below. Permeability is moderately rapid to rapid in the upper 9 inches, slow between 9 and 53 inches, and very slow below. Natural fertility is medium, and organic-matter content is low to medium.

If well managed, Flemington soils are moderately well suited to cultivated crops commonly grown in the area. They are well suited to improved pasture of locally grown grasses and legumes.

Representative profile of Flemington loamy sand, 0 to 2 percent slopes, in a wooded area about 2.25 miles northwest of intersection of U.S. Highway 27 and State Highway 326 and 400 feet north of U.S. Highway 27, SW¼NE¼ sec. 36, T. 13 S., R. 19 E.

A1—0 to 5 inches; very dark gray (N 3/0) loamy sand; moderate medium granular structure; many fine and medium roots; very strongly acid; gradual wavy boundary.

A2—5 to 9 inches; gray (N 5/0) loamy sand; weak medium granular structure; very friable; many fine and medium roots; medium acid; abrupt wavy boundary.

B21tg—9 to 27 inches; dark gray (N 4/0) clay; common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; firm, sticky and plastic, hard; thin distinct clay films on faces of peds; few slickensides along structure breaks; few fine and medium roots; few root channels; very strongly acid; gradual wavy boundary.

B22tg—27 to 41 inches; gray (N 5/0) clay; common fine distinct strong brown (7.5YR 5/6) mottles; moderate medium angular and subangular blocky structure; firm, sticky and plastic, hard; thin distinct clay films on faces of peds; few slickensides; few roots in upper part and very few in lower part; very strongly acid; gradual irregular boundary.

B23tg—41 to 53 inches; gray (N 5/0) clay; common fine and medium faint light gray (10YR 7/1) and few medium prominent strong brown (7.5YR 5/8) mottles; massive, some moderate subangular blocky structure; firm, sticky and plastic, hard; few discontinuous distinct clay films along structure breaks; few small quartz pebbles; very few fine roots; very strongly acid; gradual irregular boundary.

Cg—53 to 75 inches; light gray (5Y 7/1) clay; prominent strong brown (7.5YR 5/6) and dark brown (7.5YR 4/4) mottles; few coarse mottles and firm concretions of red (2.5YR 4/8); massive; firm, sticky and plastic; few fine roots; very strongly acid.

The solum is 50 to about 78 inches thick. It is 0 to about 5 percent gravel or fragments of leached phosphatic limestone less than 3 inches in diameter. The content of plinthite ranges from 0 to 5 percent in the Btg and Cg horizons.

The A1 or Ap horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0, 10YR 4/1) to gray (N 5/0, 10YR 5/1). It is 4 to 6 inches thick. If black or very dark gray, it is less than 6 inches thick. The A2 horizon is dark gray (N 4/0, 10YR 4/1), gray (N 5/0; 10YR 5/1, 6/1), or light brownish gray (10YR 6/2). It is 4 to 10 inches thick. Reaction in the A horizon ranges from extremely acid to medium acid.

A B1g horizon occurs in some pedons. It is dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 6/0; 10YR 5/1, 6/1), or light grayish brown (10YR 6/2) sandy clay loam 2 to 3 inches thick.

The B2tg horizon is dark gray (N 4/0, 10YR 4/1), gray (N 5/0; 10YR 5/1, 6/1), or light brownish gray (10YR 6/2, 2.5Y 6/2) clay. It has few to many mottles in shades of yellow, brown, and red. It is 43 to 64 inches thick. The upper 20 inches of the Btg horizon is, by weighted average, about 60 to 75 percent clay. The B23tg horizon in some pedons has fine lenses and pockets of coarser textured material. Reaction of the Btg horizon ranges from extremely acid to strongly acid.

The Cg horizon is gray (N 5/0; 10YR 5/1, 6/1), light gray (10YR 7/1; 5Y 7/1, 7/2), or light greenish gray (5GY 7/1, 5G 7/1) clay. It ranges from extremely acid to strongly acid.

Flemington soils are closely associated with Blichton, Fellowship, Micanopy, Lochloosa, Kanapaha, Martel, and Zuber soils. They have a thinner A horizon and a finer textured Btg horizon than Blichton and Kanapaha soils. They differ from Fellowship and Martel soils in having a thinner A1 horizon and in having an A2 horizon. They are more poorly drained than Micanopy, Zuber, and Lochloosa soils and have a thinner A horizon and a finer textured Bt horizon than Lochloosa soils.

**FmA—Flemington loamy sand, 0 to 2 percent slopes.** This is a nearly level, poorly drained soil that occurs as small areas in the upland. It has the profile described as representative of the series. The water table is in the subsurface layer and the upper part of the subsoil. It is within 10 inches of the surface for 1 month to 4 months during most years. During extremely wet periods, the surface may be covered with water for brief periods because surface runoff and the infiltration rate are slow (fig. 3).

Included with this soil in mapping are areas, of a similar soil, where the subsoil is more than 5 percent plinthite and small areas of a poorly drained soil that has a fine sand surface layer and a sandy clay loam or sandy clay subsoil. Also included are small areas of Blichton, Fellowship, Kanapaha, and Micanopy soils and small areas where the slope is more than 2 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

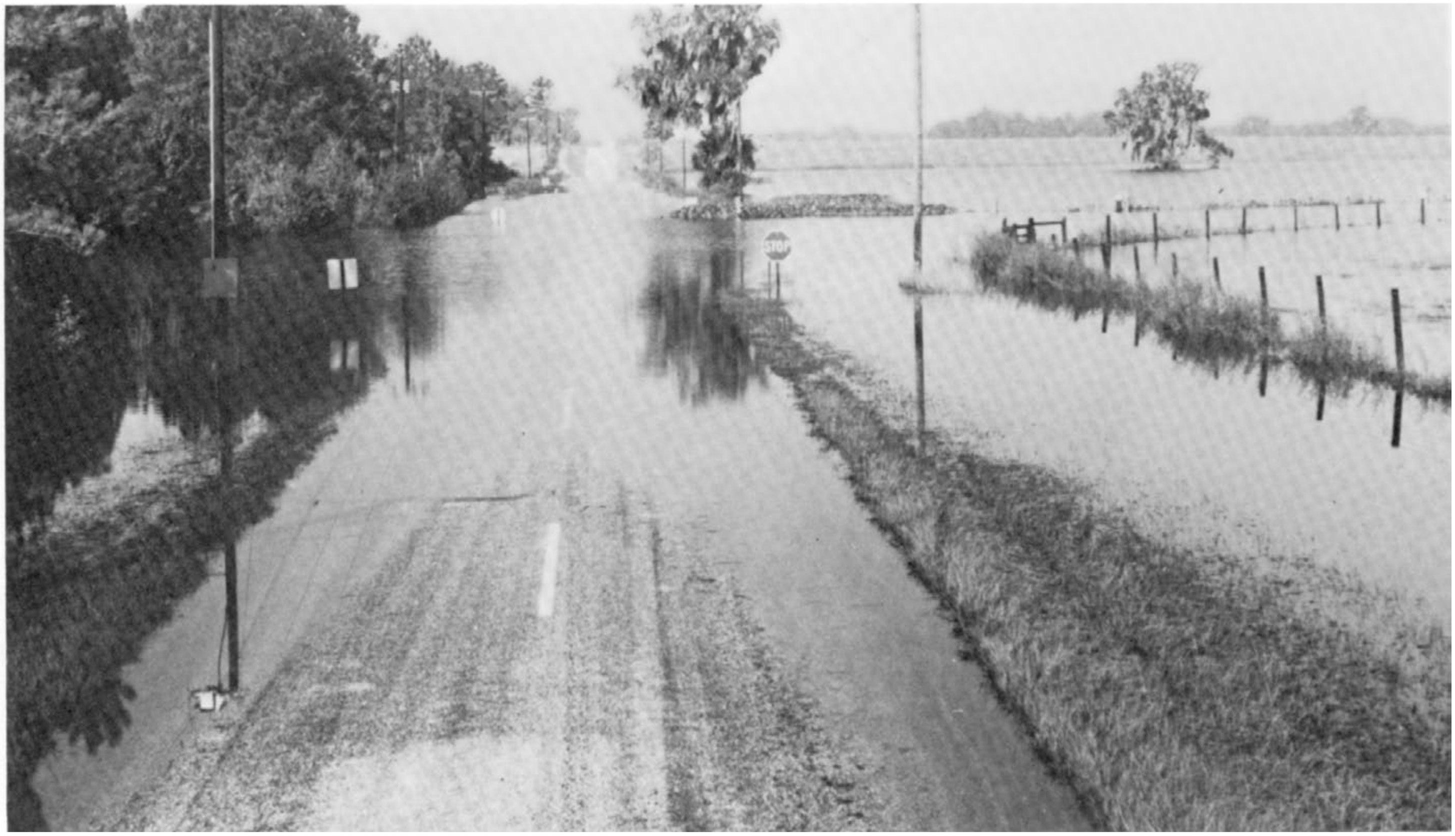

*Figure 3.*—An area of Flemington loamy sand, 0 to 2 percent slopes, covered with water after a period of high rainfall.

The natural vegetation is a forest of slash pine, loblolly pine, oak, sweetgum, and hickory and an understory of chiefly waxmyrtle and native grasses. Most areas are still in native vegetation. Most cleared areas are in improved pasture. Capability unit IIIw–5; woodland group 2w1.

**FmB—Flemington loamy sand, 2 to 5 percent slopes.** This is a gently sloping, poorly drained soil that occurs as small and large areas of the upland. The hazard of erosion is moderate because the infiltration rate is slow and surface runoff is medium. The subsurface layer and the upper part of the subsoil are saturated with a perched water table for 1 month to 4 months during most years.

Included with this soil in mapping are small areas of Fellowship, Blichton, Lochloosa, Micanopy, and Kanapaha soils; small areas, of a similar soil, where the surface layer is fine sand and the subsoil is sandy clay loam or sandy clay; and small areas where the subsoil is more than 5 percent plinthite. Also included are small areas of a similar soil that has a slope of 0 to 2 or 5 to 8 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is chiefly slash pine, loblolly pine, live oak, water oak, laurel oak, sweetgum, hickory, and magnolia and an understory of waxmyrtle and native grasses. Most areas are still in forest, but many have been cleared and are in improved pasture. Capability unit IIIw–2; woodland group 2w1.

## Gainesville Series

The Gainesville series consists of nearly level to sloping, well drained soils that formed in thick beds of sandy marine sediments. These soils occur in broad, undulating areas of the upland. They commonly have a uniform texture of loamy sand to a depth of 80 inches or more. The water table is at a depth of more than 72 inches.

In a representative profile the surface layer is loamy sand about 10 inches thick. The upper 5 inches is very dark grayish brown, and the lower 5 inches is dark brown. The underlying material to a depth of more than 90 inches is loamy sand. The upper 13 inches is brown, and the lower 67 inches is strong brown.

Available water capacity is low. Organic-matter content is low. Natural fertility is medium. Permeability is rapid to a depth of more than 80 inches.

Gainesville soils are moderately well suited to most general farm crops. They are well suited to improved pasture of deep-rooting grasses and commonly grown legumes.

Representative profile of Gainesville loamy sand, 0 to 5 percent slopes, in an undisturbed area about one-half mile east of Lake Weir Avenue and one-quarter mile northeast of Bible Baptist Church, NW¼SW¼ sec. 28, T. 15 S., R. 22 E.

A11—0 to 5 inches; very dark grayish brown (10YR 3/2) loamy sand; moderate medium granular structure; very friable; common fine and medium roots; common fine and medium pores; few fine and medium weathered phosphatic and ironstone nodules; very strongly acid; clear smooth boundary.

A12—5 to 10 inches; dark brown (7.5YR 4/2) loamy sand; common medium distinct yellowish brown (10YR 5/4) splotches; weak medium granular structure; very friable; common fine and medium and few large roots; many coated sand grains; common fine pores; few fine and medium weathered phosphatic and ironstone nodules; strongly acid; clear smooth boundary.

C1—10 to 23 inches; brown (7.5YR 5/4) loamy sand; weak medium granular structure; very friable; common fine and medium and few large roots; many coated sand grains; few medium root channels filled with dark brown (7.5YR 4/2) material from above horizon; common fine pores; few fine and medium weathered phosphatic and ironstone nodules; medium acid; clear wavy boundary.

C2—23 to 90 inches; strong brown (7.5YR 5/6) loamy sand; moderate medium granular structure; very friable; many coated sand grains; few fine roots; few fine root channels and pores; few fine to medium weathered phosphatic and ironstone nodules; medium acid.

The soil is 80 inches or more thick. Reaction ranges from very strongly acid to medium acid in all horizons. The silt and clay content ranges from 10 to 15 percent between depths of 10 and 40 inches. The content of weathered phosphatic and ironstone nodules 4 to 20 millimeters in size is, by volume, about 1 to 3 percent. These nodules generally occur at the surface and throughout the profile.

The A horizon is loamy sand 5 to 10 inches thick. It ranges from very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), dark gray (10YR 4/1), and dark brown (7.5YR 4/2) to dark grayish brown (10YR 4/2).

The C horizon is dark yellowish brown (10YR 4/4), yellowish brown (10YR 5/4, 5/6, 5/8), brown (7.5YR 5/4, 10YR 4/3), dark brown (7.5YR 4/4), strong brown (7.5YR 5/6, 5/8), or yellowish red (5YR 5/6, 5/8, 4/6, 4/8) loamy sand or loamy fine sand.

Gainesville soils are closely associated with Arredondo, Hague, Kendrick, and Zuber soils. They are loamy sand to a depth of more than 80 inches, whereas Arredondo soils are sandy loam or sandy clay loam below a depth of 40 to 80 inches, Hague and Kendrick soils are sandy loam and sandy clay loam below a depth of 20 to 40 inches, and Zuber soils are loamy fine sand to a depth of less than 20 inches and are sandy clay below.

**GaB—Gainesville loamy sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, well drained soil that occurs as small and large areas in the upland. It has the profile described as representative of the series. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas, of a similar soil, where the texture is fine sand to a depth of more than 80 inches and a few spots, also of a similar soil, where the slope is 5 to 8 percent. Also included are small areas of Arredondo, Hague, Kendrick, and Zuber soils. Included soils make up less than 15 percent of any one mapped area.

The natural vegetation is magnolia, maple, live oak, water oak, laurel oak, dogwood, holly, slash pine, longleaf pine, and loblolly pine. Most areas are cleared and are used for crops and improved pasture. Capability unit IIIs-1; woodland group 3s1.

**GaC—Gainesville loamy sand, 5 to 8 percent slopes.** This is a sloping, well drained soil that generally occurs as small areas on sharp-breaking slopes in the upland. Surface runoff is slow, and the erosion hazard is slight. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are a few small areas of Arredondo, Hague, and Kendrick soils and areas of a well drained soil that is fine sand to a depth of 80 inches or more. Also included are a few spots, of a similar soil, where the slope is 0 to 5 or 8 to 12 percent. Included soils make up less than 15 percent of any one mapped area.

The natural vegetation is magnolia, live oak, water oak, slash pine, longleaf pine, and loblolly pine and an understory of shrubs and native grasses. Most areas have been cleared and are in improved pasture. Capability unit IVs-2; woodland group 3s1.

## Hague Series

The Hague series consists of gently sloping to sloping, well drained soils that formed in thick beds of sandy and loamy deposits influenced by phosphatic material. They occur as small areas in the upland. The water table is at a depth of more than 60 inches.

In a representative profile the surface layer is mixed very dark grayish brown and dark grayish brown sand about 8 inches thick. The subsurface layer is sand about 16 inches thick. The upper 9 inches is light yellowish brown, and the lower 7 inches reddish yellow. The subsoil extends to a depth of 74 inches. It is, in sequence downward, 3 inches of strong brown sandy loam, 13 inches of yellowish red sandy clay loam, 9 inches of yellowish red sandy loam, and 25 inches of strong brown loamy sand. The underlying material to a depth of 82 inches is strong brown loamy sand.

Available water capacity is low in the upper 24 inches and medium below. Permeability is rapid in the upper 24 inches and moderate to moderately rapid below. Natural fertility is low in the upper 24 inches and medium below. Organic-matter content is low.

Hague soils are well suited to most general farm crops and improved pasture of deep-rooting grasses and locally grown legumes.

Representative profile of Hague sand, 2 to 5 percent slopes, in an area of planted pine 400 feet east of Bible Baptist Church on east side of Lake Weir Avenue, NW¼SW¼ sec. 28, T. 15 S., R. 22 E.

A1—0 to 8 inches; mixed very dark grayish brown (10YR 3/2) and dark grayish brown (10YR 4/2) sand; moderate medium coarse granular structure; very friable; few fine and medium roots; few fine uncoated quartz grains; strongly acid; abrupt smooth boundary.

A21—8 to 17 inches; light yellowish brown (10YR 6/4) sand mixed with dark grayish brown (10YR 4/2) in root channels; weak medium granular structure; very friable; few fine and medium roots; medium acid; gradual smooth boundary.

A22—17 to 24 inches; reddish yellow (7.5YR 6/8) sand; weak medium granular structure; very friable; few fine and medium roots; medium acid; clear smooth boundary.

B21t—24 to 27 inches; strong brown (7.5YR 5/6) sandy loam; weak fine subangular blocky structure; friable; few fine roots; common fine pores and few fine root channels; few discontinuous clay flows along ped faces; medium acid; clear smooth boundary.

B22t—27 to 40 inches; yellowish red (5YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few fine pores and root channels; few discontinuous clay flows on ped faces; medium acid; gradual wavy boundary.

B23t—40 to 49 inches; yellowish red (5YR 4/6) sandy loam; moderate medium subangular blocky structure; friable; few fine roots; few pores and root channels; discontinuous clay flows on ped faces; medium acid; clear smooth boundary.

B31—49 to 62 inches; strong brown (7.5YR 5/6) loamy sand; weak fine subangular blocky structure; friable; few fine roots; few pores; medium acid; smooth boundary.

B32—62 to 74 inches; strong brown (7.5YR 5/6) loamy sand; massive, some weak fine subangular blocky structure; very friable; few pores; medium acid; diffuse boundary.

C—74 to 82 inches; strong brown (7.5YR 5/6) loamy sand; massive; very friable; few pebbles 1/4 to 1/2 inch in diameter; medium acid.

The solum is 60 inches or more thick. Few to common small phosphatic pebbles occur throughout the solum in some pedons.

The A horizon is sand. It ranges from very strongly acid to medium acid. The A1 or Ap horizon is very dark gray (10YR 3/1), dark gray (10YR 4/1), very dark grayish brown (10YR 3/2), dark grayish brown (10YR 4/2), or dark brown (7.5YR 3/2, 4/2). It is 5 to 10 inches thick. The A2 horizon is dark brown (10YR 4/3, 7.5YR 4/4), brown (10YR 5/3, 7.5YR 5/4), light yellowish brown (10YR 6/4), dark yellowish brown (10YR 4/4), brownish yellow (10YR 6/6, 6/8), yellowish brown (10YR 5/4, 5/6, 5/8), and reddish yellow (7.5YR 6/6, 6/8) to strong brown (7.5YR 5/6, 5/8). It is 15 to 30 inches thick.

The B2t horizon is strong brown (7.5YR 5/6, 5/8) to yellowish red (5YR 5/6, 5/8, 4/6, 4/8) sandy loam or sandy clay loam. It is 18 to 40 inches thick. Reaction ranges from very strongly acid to medium acid. The clay content of the Bt horizon is centered on 18 to 25 percent, but ranges from about 18 to 30 percent. The silt content is about 2 to 15 percent.

The B3 horizon is yellowish brown (10YR 5/6, 5/8), strong brown (7.5YR 5/6, 5/8), or yellowish red (5YR 4/8, 5/6, 5/8) sandy loam, loamy sand, or loamy fine sand. The thickness ranges from about 12 to 36 inches. Reaction ranges from very strongly acid to medium acid.

The C horizon is at a depth below 60 inches. It is strong brown (7.5YR 5/6, 5/8) or yellowish brown (10YR 5/6, 5/8) loamy sand or loamy fine sand. Reaction ranges from strongly acid to slightly acid.

Hague soils are closely associated with Arredondo, Gainesville, Kendrick, Lochloosa, and Zuber soils. Their A horizon is 20 to 40 inches thick, whereas that of Arredondo soils is more than 40 inches thick. They have a sandy clay loam or sandy loam Bt horizon, whereas Gainesville soils have no Bt horizon and are sandy to a depth of 80 inches or more. They have a base saturation of 35 percent or more in the Bt horizon, whereas Kendrick soils have a base saturation of less than 35 percent. They are better drained than Lochloosa soils. They are of siliceous mineralogy and have an A horizon that is more than 20 inches thick, whereas Zuber soils are of mixed mineralogy and have an A horizon that is less than 20 inches thick.

**HaB—Hague sand, 2 to 5 percent slopes.** This is a gently sloping, well drained soil that occurs generally as small areas in the upland. It has the profile described as representative of the series. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas of Kendrick, Gainesville, Arredondo, and Zuber soils; a few areas, of a similar soil, where the base saturation is less than 35 percent within a depth of 72 inches; and a few areas, also of a similar soil, where the surface layer is fine sand and loamy fine sand. Also included are a small acreage where the slope is 0 to 2 percent and a few areas where the subsoil is within a depth of 20 inches. Moderately eroded spots occur in a few areas. Sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up less than 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, longleaf pine and a growth of hardwoods that includes oak, dogwood, hickory, magnolia, and sweetgum. Most areas are cleared and are used for crops and improved pasture. Capability unit IIe–2; woodland group 2o1.

**HaC—Hague sand, 5 to 8 percent slopes.** This is a sloping, well drained soil that occurs as small areas in the upland. It has a profile similar to that described as representative of the series, but the surface and subsurface layers combined are about 2 to 4 inches thinner. Surface runoff is medium, and the hazard of erosion is moderate. A few rills and shallow gullies have formed. The water table is at a depth of more than 72 inches.

Included with this soil in mapping are small areas of Kendrick, Zuber, and Gainesville soils; spots where the soil is less than 60 inches deep over bedrock; and a few areas of a similar soil that has a slope of 8 to 12 percent. Also included are small areas, of a similar soil, where the surface layer is fine sand and loamy fine sand and spots of a moderately eroded soil. Rock outcrop and sinkholes, both of which occur in some areas, are identified by a spot symbol on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, longleaf pine, oak, dogwood, hickory, and magnolia. Most areas are cleared and are used for improved pasture. Some cleared areas are used for crops. Capability unit IIIe–1; woodland group 2o1.

**HgB—Hague-Urban land complex, 0 to 5 percent slopes.** This mapping unit is about 60 to 70 percent a well drained Hague sand and 30 to 40 percent Urban land. The percentage differs from one mapped area to another. Hague sand is in open areas, such as parks, playgrounds, and vacant lots. Urban land is covered with sidewalks, streets, houses, driveways, industrial buildings, parking lots, and other structures.

About 15 to 30 percent of the open area has been modified by the cutting, grading, and spreading of the soil material in preparing sites for buildings, streets, and septic tanks. The soil material excavated is spread over adjacent areas. It is mostly 1 inch to 12 inches thick. It is sandy and loamy.

Included in this unit in mapping are Kendrick, Arredondo, and Zuber soils, all of which are similar to the Hague sand. These included soils make up about 15 percent of some open areas. Also included are small areas, of a similar soil, where the slope is 5 to 8 percent.

This mapping unit is well suited to lawn grasses and ornamental plants. The water table is at a depth of more than 72 inches. Not assigned to a capability unit or woodland group.

## Holopaw Series

The Holopaw series consists of nearly level, poorly drained soils that formed in thick beds of stratified sandy and loamy marine deposits. These soils occur on low-lying flats and in shallow depressions in the flatwoods. The water table is within 10 inches of the surface for 2 to 6 months annually. Water is on the surface for short periods during wet seasons. Many depressions are covered with water for 2 to 6 months during most years.

In a representative profile the surface layer is dark gray sand about 5 inches thick. The subsurface layer extends to a depth of 59 inches. The upper 7 inches is grayish brown sand, the next 28 inches is gray sand, and the lower 19 inches is gray sand mottled with light gray. The subsoil, between depths of 59 to 72 inches, is mottled gray light sandy clay loam.

Available water capacity is very low to low in the upper 59 inches and medium below. Permeability is rapid in the upper 59 inches and moderately rapid below. Natural fertility is low in the upper 59 inches of sandy material and medium in the loamy material below. Organic-matter content is low.

Holopaw soils are poorly suited to general farm crops. If water is controlled, however, they are well suited to commonly grown special crops and to improved pasture.

Representative profile of Holopaw sand, in an undisturbed area where the plant cover is cabbage palm, gum, bluestems, palmetto, and scattered loblolly pine; 0.3 mile west of Cabbage Landing on Oklawaha River, about 1 mile northeast of Gores Landing, NE¼NE¼ sec. 5, T.14 S., R. 24 E.

A1—0 to 5 inches; dark gray (10YR 4/1) sand; weak medium granular structure; very friable; many fine and medium and few large roots; medium acid; abrupt wavy boundary.

A21—5 to 12 inches; grayish brown (10YR 5/2) sand, single grained; loose; common fine and medium roots; neutral; gradual wavy boundary.

A22—12 to 40 inches; gray (10YR 5/1) sand; single grained; loose; few fine and medium roots; neutral; gradual wavy boundary.

A23—40 to 59 inches; gray (10YR 5/1) sand; few medium distinct light gray (10YR 7/1) mottles; single grained; loose; few fine roots; neutral; clear wavy boundary.

Btg—59 to 72 inches; gray (10YR 5/1) light sandy clay loam; few fine distinct yellowish brown mottles; weak medium subangular blocky structure; friable; few roots; few thin discontinuous clay films on ped faces; moderately alkaline.

Thickness of the solum is generally 62 to 85 inches. The A horizon ranges from strongly acid to neutral. It is 42 to 70 inches thick. The A1 horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10 YR 3/1), and dark gray (N 4/0, 10YR 4/1). It is 5 or 6 inches thick. The A2 horizon is gray (10YR 5/1, 6/1), light gray (10YR 7/1, 7/2), grayish brown (10YR 5/2), and light brownish gray (10YR 6/2). In places it has mottles in shades of gray, yellow, and brown. It is 37 to 64 inches thick.

Reaction in the Bg horizon ranges from slightly acid to moderately alkaline. The Btg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light gray (N 7/0, 10YR 7/1) mottled with shades of yellow and brown. It is sandy loam or sandy clay loam 11 to 23 inches thick.

The B3g horizon, if it occurs, is gray (N 5/0, 6/0; 10YR 5/1, 6/1) mottled with shades of yellow and brown. It is sandy loam or is sandy clay loam that has lenses and pockets of sandy loam and loamy sand. It is 3 to 7 inches thick.

The Cg horizon either is gray (N 5/0, 6/0; 10YR 5/1, 6/1) sandy clay loam that has pockets and lenses of coarser textured material or is stratified sandy clay loam, sandy loam, and loamy sand.

Holopaw soils are associated with Anclote, Paisley, and Pomona soils. They have a thicker, finer textured A horizon than Paisley soils. Also, they have a loamy Btg horizon and are siliceous, whereas Paisley soils have a clayey Btg horizon and are montmorillonitic. They do not have the thick, black A1 horizon characteristic of Anclote soils. They differ from Pomona soils in having no Bh horizon and in having a higher base saturation.

**Ho—Holopaw sand.** This is a poorly drained soil that occurs as small and large areas on broad flats and in shallow depressions of the flatwoods. Slopes are 0 to 2 percent. The water table is within 10 inches of the surface for 2 to 6 months annually. Water is on the surface for short periods during wet seasons. Many depressions are covered with water for 2 to 6 months during most years.

Included with this soil in mapping are small areas, of similar soils, where the surface layer is fine sand and loamy sand or the sandy clay loam subsoil is at a depth of 20 to 40 inches. Also included are small areas of Paisley, Anclote, and Pomona soils. Included soils make up less than 20 percent of any one mapped area.

The natural vegetation is a forest of either slash pine and loblolly pine or swamp hardwoods, including oak, gum, maple, and palm. The understory is chiefly waxmyrtle, bluestems, palmetto, cabbage palm, and native grasses. Most areas are still in woodland. A few cleared areas are in improved pasture. Capability unit IVw-3; woodland group 3w2.

## Jumper Series

The Jumper series consists of nearly level to gently sloping, somewhat poorly drained soils that formed in thick beds of loamy marine sediments. These soils are in the flatwoods and along gentle slopes of the sandy uplands. The water table fluctuates between approximately 30 and 60 inches for 2 to 4 months during most years. For brief periods of about 2 weeks to 2 months, it is within a depth of 30 inches.

In a representative profile the surface layer is dark gray fine sand about 6 inches thick. The subsurface layer is about 23 inches of very pale brown sand mottled with dark gray and light gray in the upper 9 inches and with white, gray, and yellow in the lower 13 inches. The subsoil is between depths of 29 and 80 inches. It is, in sequence downward, 6 inches of yellowish brown sandy clay loam mottled with light gray and strong brown, 18 inches of pale brown sandy clay loam mottled with yellowish red and gray, 16 inches of gray and yellowish brown sandy clay loam that is mottled with red and is about 12 percent plinthite, and 11 inches of mottled red, yellowish red, and gray sandy clay loam that has lenses of sandy clay, sandy loam, and loamy sand and is about 15 percent plinthite.

Available water capacity is very low in the upper 29 inches and medium below. Permeability is rapid in the upper 29 inches and moderate below. Natural fertility is low in the upper 29 inches and medium below. Organic-matter content is low.

Jumper soils are moderately well suited to general farm crops. They are well suited to the deep-rooting improved pasture grasses and legumes grown in the area.

Representative profile of Jumper fine sand, 0 to 5 percent slopes, in an area presently in slash pine, oak, briers, scattered bluestems and palmetto, and wiregrass; 2 miles east of Fort McCoy and one-half mile south of State Road 316, NW¼NE¼ sec. 13, T. 13 S., R. 23 E.

Ap—0 to 6 inches; dark gray (10YR 4/1) fine sand; weak fine granular structure; few fine roots; very strongly acid; clear wavy boundary.

A21—6 to 15 inches; very pale brown (10YR 7/3) sand; few fine and medium splotches of dark gray (10YR 4/1); few fine faint light gray mottles; single grained; loose; few fine and medium roots; few fine carbon particles; few fine slightly firm yellowish red (5YR 5/8) concretions of iron; very strongly acid; gradual wavy boundary.

A22—15 to 29 inches; very pale brown (10YR 7/3) sand; few fine faint white, gray, and yellow mottles; single grained; loose; few medium and fine roots; few fine carbon particles; few fine slightly firm yellowish red (5YR 5/8) concretions of iron; very strongly acid; clear wavy boundary.

B21t—29 to 35 inches; yellowish brown (10YR 5/4) sandy clay loam; few fine and medium distinct light gray (10YR 7/1), few medium distinct strong brown (7.5YR 5/8), and few fine prominent red mottles; weak medium subangular blocky structure; friable; few fine roots; few fine carbon particles; sand grains coated and bridged with clay; few fine slightly firm yellowish red (5YR 5/8) bodies; very strongly acid; gradual wavy boundary.

B22t—35 to 53 inches; pale brown (10YR 6/3) sandy clay loam; few fine and medium yellowish red (5YR 5/8) and common fine and medium gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; few fine roots; few fine carbon particles; discontinuous clay films along faces of peds; few fine slightly firm red (10R 5/8) bodies; very strongly acid; clear wavy boundary.

B23t—53 to 69 inches; gray (10YR 6/1) and yellowish brown (10YR 5/8) sandy clay loam; common medium prominent red (10R 4/8) and few fine faint gray mottles; weak medium subangular blocky structure; friable; slightly compact; few fine carbon particles; few discontinuous clay films on faces of peds; about 12 percent plinthite; very strongly acid; clear wavy boundary.

B3g—69 to 80 inches; mottled red (10YR 4/8), yellowish red (5YR 5/8), and gray (10YR 6/1) sandy clay loam; lenses of sandy clay, sandy loam, and loamy sand; massive; friable; about 15 percent plinthite; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to strongly acid in all horizons. Plinthite occurs within a depth of 28 to 57 inches. The content of plinthite ranges from 5 to 15 percent.

The A horizon is dominantly 22 to 37 inches thick, but ranges from 20 to 40 inches.

The A1 or Ap horizon is very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0, 10YR 4/1), dark grayish brown (10YR 4/2), or gray (N 5/0, 10YR 5/1) fine sand. It is 5 to 8 inches thick. If very dark gray (N 3/0, 10YR 3/1), it is less than 6 inches thick.

The A2 horizon is light brownish gray (10YR 6/2), very pale brown (10YR 7/3, 7/4, 8/3, 8/4), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), brownish yellow (10YR 6/6), or yellowish brown (10YR 5/4) fine sand. It has few to common mottles in shades of gray, brown, and yellow. Thickness is 17 to 31 inches.

The B21t and B22t horizons are pale brown (10YR 6/3), light yellowish brown (10YR 6/4, 2.5Y 6/4), very pale brown (10YR 7/3, 7/4), brownish yellow (10YR 6/6, 6/8), or yellowish brown (10YR 5/4, 5/6, 5/8) mottled with shades of gray, yellow, brown, and red. The B21t horizon is sandy loam or sandy clay loam, and the B22t horizon is sandy clay loam. The B21t horizon is 6 to 9 inches thick, and the B22t horizon is 15 to 21 inches thick. In some pedons the B22t horizon is the same color as the B23t horizon.

The B23t horizon is mottled with shades of gray, yellow, and brown or is mottled gray (10YR 5/1, 6/1). It is sandy clay loam and is 14 to 16 inches thick.

The B3g horizon is dominantly gray (10YR 5/1, 6/1), light gray (10YR 7/1), or light brownish gray (10YR 6/2) and has common to many mottles in shades of yellow, brown, and red. In some pedons it has no matrix color and is mottled in shades of red, gray, yellow, and brown. It is sandy clay loam that in places has lenses of coarser and finer textured material. It is 9 to 14 inches thick.

The C horizon, if it occurs, ranges from sandy clay loam that has pockets of finer and coarser textured material to stratified loamy sand, sandy loam, sandy clay loam, and clay.

Jumper soils are closely associated with Apopka, Sparr, and Lynne soils. They have a thinner A horizon than Apopka soils and are more poorly drained. They have a thinner A horizon than Sparr soils. They are better drained than Lynne soils and do not have the Bh horizon characteristic of those soils.

**JuB—Jumper fine sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, somewhat poorly drained soil that occurs as small areas in the flatwoods and along gentle slopes of the sandy uplands. The water table fluctuates between approximately 30 and 60 inches for 2 to 4 months during most years. For brief periods of about 2 weeks to 2 months, it is within a depth of 30 inches.

Included with this soil in mapping are a few areas of a similar soil that has a loamy sand surface layer, small areas of a similar soil that has a sandy clay subsoil or is less than 5 percent plinthite within a depth of 60 inches, and small areas of a somewhat poorly drained soil that has a sandy surface layer less than 20 inches thick. Also included are small areas of Apopka, Sparr, and Lynne soils and a few small areas where the slope is 5 to 8 percent. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, longleaf pine, water oak, live oak, and post oak and an understory of chiefly waxmyrtle, briers, and scattered palmetto and native grasses. Most areas are still in natural vegetation or are in planted pine. Capability unit IIw-1; woodland group 3w1.

## Kanapaha Series

The Kanapaha series consists of nearly level to gently sloping, poorly drained soils that formed in thick beds of sandy and loamy deposits influenced by phosphatic material. These soils occur as small areas in the upland.

The water table is within 10 inches of the surface for periods of 1 month to 3 months during most years. During dry periods it recedes to a depth of more than 40 inches.

In a representative profile the surface layer is gray fine sand about 7 inches thick. The subsurface layer is light gray fine sand about 41 inches thick. The subsoil is between depths of 48 to 82 inches. The upper 7 inches is mottled gray fine sandy loam, the next 15 inches is mottled gray sandy clay that is about 3 percent plinthite, and the lower 12 inches is mottled gray sandy clay loam that is about 4 percent plinthite. The underlying material to a depth of 88 inches is mottled gray sandy clay loam that has lenses of sandy loam and loamy sand and is about 3 percent plinthite.

Available water capacity is low to very low in the upper 48 inches and medium below. Permeability is rapid in the upper 48 inches, moderate from 48 to 55 inches, moderately slow from 55 to 82 inches, and moderate below. Natural fertility is low in the upper 48 inches of sandy material and medium in the finer textured material below. Organic-matter content is low.

Kanapaha soils are moderately well suited to commonly grown cultivated crops. They are well suited to improved pasture of locally grown grasses and legumes.

Representative profile of Kanapaha fine sand, 0 to 5 percent slopes, in a citrus grove about 3 miles southwest of Ocala, one-half mile west of intersection of State Road 475 and Buffington Road, and 600 feet west of Southwest 7th Avenue, SW¼NE¼ sec. 6, T. 15 S., R. 22 E. (Catalina de Jesus Hijuelas Grant):

Ap—0 to 7 inches; gray (10YR 5/1) fine sand; weak medium granular structure; very friable; common fine roots; common uncoated sand grains; few fine phosphatic and ironstone nodules; strongly acid; clear wavy boundary.

A21—7 to 40 inches; light gray (10YR 7/1) fine sand; few medium faint white (10YR 8/1) splotches and few medium and large krotovinas of gray (10YR 5/1) in upper part; few medium distinct light yellowish brown (10YR 6/4) mottles in lower part; single grained; loose; few fine roots; many uncoated sand grains; few fine phosphatic nodules and concretions of iron; very strongly acid; clear wavy boundary.

A22—40 to 48 inches; light gray (10YR 7/1) fine sand; single grained; loose; few fine roots; few fine phosphatic nodules; common medium slightly firm strong brown concretions; some uncoated sand grains; very strongly acid; clear wavy boundary.

B21tg—48 to 55 inches; gray (10YR 6/1) fine sandy loam; few fine and medium distinct yellowish brown (10YR 5/8) mottles; weak medium subangular blocky structure; very friable; clay bridging between sand grains; few fine weathered phosphatic nodules and concretions of iron; few fine roots; very strongly acid; clear wavy boundary.

B22tg—55 to 70 inches; gray (N 5/0) sandy clay; few fine and medium prominent red (10YR 4/8) and few fine distinct yellowish brown mottles; moderate medium subangular blocky structure; friable; very few fine roots; discontinuous patches of clay films along root channels and on faces of peds; 3 percent plinthite; very strongly acid; clear wavy boundary.

B3g—70 to 82 inches; gray (10YR 5/1) sandy clay loam; few medium distinct brownish yellow (10YR 6/8) and few medium prominent yellowish red (5YR 5/6) mottles; weak medium subangular blocky structure; friable; 4 percent plinthite; very strongly acid; gradual wavy boundary.

Cg—82 to 88 inches; gray (10YR 6/1) sandy clay loam mixed with medium and large strata and bodies of sandy loam and loamy sand; few medium distinct yellowish brown (10YR 5/6) and few fine prominent yellowish red (5YR 5/6) mottles; massive; friable; 3 percent plinthite; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid to strongly acid in all horizons. The solum is about 1 to 5 percent, by volume, phosphatic and ironstone nodules less than three-quarters of an inch in diameter. In some pedons it is less than 5 percent gravel or fragments of siliceous rock and leached phosphatic limestone less than 3 inches in diameter.

The A horizon is fine sand. The A1 or Ap horizon is very dark gray (10YR 3/1), dark gray (10YR 4/1), gray (10YR 5/1, 6/1), or grayish brown (10YR 5/2). It is 4 to 8 inches thick. The A2 horizon is gray (10YR 5/1, 6/1), light brownish gray (10YR 6/2), light gray (10YR 7/1, 7/2), or white (10YR 8/1) and in places is mottled with gray, yellow, and brown. It is 36 to 64 inches thick.

The B2tg and B3g horizons are 0 to 5 percent plinthite. The B21tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light brownish gray (10YR 6/2) mottled with shades of yellow, brown, and red. It is fine sandy loam, sandy loam, or sandy clay loam and is 4 to 8 inches thick. The B22tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) mottled with shades of yellow, brown, and red. It is sandy clay loam or sandy clay and is 12 to 18 inches thick. The upper 20 inches of the Btg horizon is, by weighted average, 20 to 35 percent clay.

The B3g horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or dark gray (N 4/0, 10YR 4/1) mottled with shades of yellow, brown, and red. It is sandy loam or sandy clay loam and is 8 to 14 inches thick.

The Cg horizon is dark gray (N 4/0, 10YR 4/1) or gray (N 5/0, 6/0; 10YR 5/1, 6/1). It is sandy loam or sandy clay loam and in many pedons has lenses of finer and coarser textured material.

Kanapaha soils are closely associated with Arredondo, Blichton, Flemington, Kendrick, and Sparr soils. They have an A horizon more than 40 inches thick, whereas in Blichton and Kendrick soils the A horizon is 20 to 40 inches thick and in Flemington soils it is less than 20 inches thick. Kanapaha soils are more poorly drained than Arredondo, Kendrick, and Sparr soils.

**KaB—Kanapaha fine sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, poorly drained soil that occurs as small areas in the upland. The water table is within about 10 inches of the surface for periods of 1 month to 3 months during most years.

Included with this soil in mapping are a few small areas of a similar soil that is more than 5 percent plinthite within a depth of 60 inches and a few small areas where the subsurface layer and the upper 20 inches of the subsoil are, by volume, 5 to more than 35 percent rock fragments one-quarter inch to 3 inches in size. Also included are spots of Arredondo, Blichton, and Sparr soils and a few small areas, of a similar soil, where the slope is 5 to 8 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up less than 25 percent of any one mapped area.

The natural vegetation is chiefly slash pine, loblolly pine, sweetgum, oak, and waxmyrtle. Most areas are still in forest. Most cleared areas are in improved pasture. Capability unit IIIw-7; woodland group 3w1.

## Kendrick Series

The Kendrick series consists of nearly level to sloping, well drained soils that formed in thick beds of loamy deposits influenced by phosphatic material. These soils occur as broad areas of the uplands. The water table is at a depth of more than 72 inches.

In a representative profile the surface layer is dark grayish brown loamy sand about 7 inches thick. The subsurface layer is yellowish brown loamy sand about 19 inches thick. The subsoil extends to a depth of 79 inches. It is, in sequence downward, 19 inches of yellowish brown sandy clay loam, 17 inches of yellowish brown sandy clay loam mottled with dark yellowish brown, 8 inches of dark yellowish brown light sandy clay mottled with yellowish brown and gray, and 9 inches of yellowish brown sandy clay loam mottled with gray. The underlying material to a depth of 83 inches is mottled gray sandy clay loam that has large lenses of sandy loam.

Available water capacity is low in the upper 26 inches and medium to high below. Permeability is rapid in the upper 26 inches and moderate from 26 to 83 inches. Natural fertility is low in the upper 26 inches of loamy sand and medium in the sandy clay loam and light sandy clay below. Organic-matter content is low.

Kendrick soils are well suited to most general farm crops and improved pasture of the locally grown deep-rooting grasses and legumes.

Representative profile of Kendrick loamy sand, 2 to 5 percent slopes, in a bahiagrass pasture one-quarter mile east of Shady Road, 2½ miles south of State Highway 200, SW¼NW¼ sec. 1, T. 15 S., R. 21 E.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; moderate medium granular structure; very friable; many fine roots; few weathered phosphatic pebbles and ironstone nodules less than ¾ of an inch in diameter; strongly acid; abrupt smooth boundary.

A31—7 to 20 inches; yellowish brown (10YR 5/4) loamy sand; weak medium granular structure; very friable; common fine roots; few weathered phosphatic pebbles and ironstone nodules less than ¾ of an inch in diameter; strongly acid; clear wavy boundary.

A32—20 to 26 inches; yellowish brown (10YR 5/6) loamy sand; moderate medium granular structure; very friable; common fine roots; few weathered phosphatic pebbles and ironstone nodules less than ¾ of an inch in diameter; strongly acid; clear wavy boundary.

B21t—26 to 32 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; common fine roots; common fine pores; clay bridging between sand grains; few fine phosphatic pebbles and ironstone nodules less than ¾ of an inch in diameter; strongly acid; clear wavy boundary.

B22t—32 to 45 inches; yellowish brown (10YR 5/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; common fine pores; faint discontinuous clay films on ped faces and pore spaces; few fine phosphatic pebbles and ironstone nodules less than ¾ of an inch in diameter; strongly acid; clear irregular boundary.

B23t—45 to 62 inches; yellowish brown (10YR 5/8) sandy clay loam; few medium faint dark yellowish brown (10YR 4/4) mottles; moderate medium subangular blocky structure; friable; very few roots; common fine pores; discontinuous clay films along ped faces and in pore spaces; few fine phosphatic pebbles and ironstone nodules less than ¾ of an inch in diameter; strongly acid; clear irregular boundary.

B24t—62 to 70 inches; dark yellowish brown (10YR 4/4) light sandy clay; common medium faint yellowish brown (10YR 5/6) and few fine distinct gray (10YR 5/1) mottles; moderate medium and fine subangular blocky structure; friable; very few roots; few fine pores; few fine phosphatic pebbles and ironstone nodules less than ¾ of an inch in diamter; strongly acid; clear wavy boundary.

B3—70 to 79 inches; yellowish brown (10YR 5/4) sandy clay loam; common fine and medium distinct gray (10YR 5/1) mottles; weak fine subangular blocky structure; friable; very strongly acid; clear wavy boundary.

C—79 to 83 inches; gray (10YR 5/1) sandy clay loam with large lenses of sandy loam; streaked with common large distinct yellowish brown (10YR 5/6) and common medium distinct gray (10YR 6/1) mottles; massive; friable; very strongly acid.

The solum is 60 inches or more thick. Reaction is very strongly to strongly acid in all horizons. A few leached phosphatic pebbles and ironstone nodules less than three-quarters of an inch in size occur throughout the solum in many pedons.

The A horizon is 20 to 40 inches thick. It is dominantly loamy sand, but ranges to sand.

The A1 or Ap horizon is very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), dark gray (10YR 4/1), dark grayish brown (10YR 4/2), or grayish brown (10YR 5/2). It is 4 to 8 inches thick. If very dark gray (10YR 3/1) or very dark grayish brown (10YR 3/2), it is less than 6 inches thick.

The A3 horizon is pale brown (10YR 6/3), brown (10YR 5/3), light yellowish brown (10YR 6/4), or yellowish brown (10YR 5/4, 5/6, 5/8). It is 16 to 32 inches thick.

The B1 horizon, if it occurs is brownish yellow (10YR 6/6, 6/8), yellowish brown (10YR 5/4, 5/6, 5/8), or strong brown (7.5YR 5/6) sandy loam. It is 3 to 5 inches thick.

The B2t horizon is brownish yellow (10YR 6/6, 6/8), yellowish brown (10YR 5/6, 5/8), strong brown (7.5YR 5/6, 5/8), or dark yellowish brown (10YR 4/4). In some pedons it has few to common mottles in shades of yellow and brown. It is 32 to 45 inches thick. The B21t and B22t horizons are sandy clay loam. The B23t and B24t horizons range from sandy clay loam to light sandy clay. They are mottled with gray in some pedons.

The B3 horizon is yellow (10YR 8/8, 7/8), yellowish brown (10YR 5/4, 5/6), dark yellowish brown (10YR 4/4), or strong brown (7.5YR 5/6, 5/8). It is dominantly sandy clay loam, but ranges to light sandy clay. It is 9 to 20 inches thick. Some pedons have a few fine lenses and pockets of sandy loam.

The C horizon is mottled gray (10YR 5/1, 6/1), brownish yellow (10YR 6/6), yellowish brown (10YR 5/4, 5/6), or strong brown (7.5YR 5/6, 5/8). The texture is sandy clay loam. Many pedons have pockets and lenses of coarser or finer textured material.

Kendrick soils are closely associated with Arredondo, Blichton, Gainesville, Hague, Kanapaha, Lochloosa, Sparr, and Zuber soils. They have a thinner A horizon than Arredondo soils and are better drained than Blichton and Lochloosa soils. They have a sandy A horizon 20 to 40 inches deep over a loamy or clayey B horizon, whereas Gainesville soils are loamy sand to a depth of more than 80 inches and have no B horizon. They have a base saturation of less than 35 percent, whereas Hague soils have a base saturation of more than 35 percent. Also in contrast with Hague soils, their Bt horizon does not decrease in clay content within a depth of 60 inches. They are better drained than Kanapaha and Sparr soils and have a thinner A horizon. They have an A horizon that is 20 to

40 inches thick, whereas Zuber soils have one that is less than 20 inches thick.

**KeA—Kendrick loamy sand, 0 to 2 percent slopes.** This is a nearly level, well drained soil that occurs as small areas in the uplands. The water table is at a depth of more than 72 inches. Runoff is slow, and the hazard of erosion is slight.

Included with this soil in mapping are small areas, of a similar soil, where the subsoil is more than 5 percent soft plinthite and small areas where the subsoil is sandy clay throughout. Also included are small areas of Hague, Arredondo, Zuber, Lochloosa, and Gainesville soils and a few areas of a similar soil that has a slope of 2 to 5 percent. Included soils make up about 12 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, longleaf pine, live oak, laurel oak, water oak, dogwood, hickory, and magnolia and an understory of native grasses. Most areas are cleared and are used for crops and improved pasture. Capability unit IIs–1; woodland group 2o1.

**KeB—Kendrick loamy sand, 2 to 5 percent slopes.** This is a gently sloping, well drained soil that occurs as small and large areas in the uplands. It has the profile described as representative of the series. The water table is at a depth of more than 72 inches. Surface runoff is medium, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas, of a similar soil, where the subsoil is more than 5 percent plinthite and small areas where the subsoil is sandy clay throughout. Also included are small areas of Hague, Arredondo, Zuber, Lochloosa, and Gainesville soils; a few areas of a similar soil that has a slope of 0 to 2 or 5 to 8 percent; and a few spots of a moderately eroded soil. Rock outcrop and sinkholes, which occur in places, are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is chiefly slash pine, loblolly pine, and longleaf pine and a growth of hardwoods, including oak, dogwood, hickory, magnolia, and sweetgum. Most areas are cleared and are used for crops and improved pasture. Capability unit IIe–2; woodland group 2o1.

**KeC—Kendrick loamy sand, 5 to 8 percent slopes.** This is a well drained, sloping soil that occurs as small areas in the uplands. The water table is at a depth of more than 72 inches. Surface runoff is medium, and the hazard of erosion is moderate.

Included with this soil in mapping are small areas where the subsoil is more than 5 percent plinthite, a few areas where the texture between depths of 20 and 40 inches is sandy clay, and spots of Arredondo, Hague, Lochloosa, and Zuber soils. Also included are a few areas, of a similar soil, where the slope is 2 to 5 or 8 to 12 percent and spots of moderately eroded soil. The rock outcrop, shallow gullies, and sinkholes that occur in places are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, longleaf pine, oak, dogwood, and hickory. Most areas are cleared and are in improved pasture of deep-rooting grasses and legumes. Capability unit IIIe–1; woodland group 2o1.

## Lochloosa Series

The Lochloosa series consists of nearly level to sloping, somewhat poorly drained soils that formed in thick beds of loamy marine deposits influenced by phosphatic material. These soils occur as small and large areas in the uplands. The water table fluctuates between 30 and 60 inches for periods of 1 month to 4 months during most years. For brief periods of about 1 week to 3 weeks, it rises to within about 15 inches of the surface. It recedes to a depth of more than 60 inches during dry periods. Wet slopes are the result of hillside seepage.

In a representative profile the surface layer is dark gray fine sand about 7 inches thick. The subsurface layer is fine sand about 21 inches thick. The upper 10 inches is mottled very pale brown, and the lower 11 inches is pale brown mottled with light gray and very pale brown. The subsoil is between depths of 28 and 69 inches. It is, in sequence downward, 4 inches of light yellowish brown fine sandy loam mottled with light brownish gray, 3 inches of yellowish brown sandy clay loam mottled with yellowish red, dusky red, and gray, 22 inches of mottled gray sandy clay loam, and 12 inches of mottled gray sandy clay that has lenses of sandy loam. The underlying material to a depth of 75 inches is mottled gray sandy clay loam that has lenses and pockets of sandy loam and loamy sand.

Available water capacity is low in the upper 28 inches, medium from 28 to 57 inches, and medium to high from 57 to 69 inches. Permeability is rapid in the upper 28 inches, moderately rapid from 28 to 32 inches, and moderate below. Natural fertility is low in the fine sand and medium in the sandy loam and sandy clay loam. Organic-matter content is generally low.

Lochloosa soils respond well to fertilization and lime and are well suited to most locally grown general farm crops. They are also well suited to improved pasture of the deep-rooting grasses and legumes grown in the area.

Representative profile of Lochloosa fine sand, 0 to 2 percent slopes, in an old field about 0.8 mile south of Fellowship, 200 feet east of paved road, NW¼NE¼ sec. 34, T. 14 S., R. 20 E.

Ap—0 to 7 inches; dark gray (10YR 4/1) fine sand; weak fine and medium granular structure; very friable; common fine roots; few fine and medium phosphatic pebbles and nodules of ironstone; few fine charcoal chips; very strongly acid; clear wavy boundary.

A21—7 to 17 inches; very pale brown (10YR 7/3) fine sand; weak fine and medium granular structure; very friable; few fine roots; few fine charcoal chips; few fine and medium phosphatic pebbles and nodules of ironstone; strongly acid; clear wavy boundary.

A22—17 to 28 inches; pale brown (10YR 6/3) fine sand; common fine and medium light gray (10YR 7/1, 7/2) and few fine faint very pale brown mottles; weak fine and medium granular structure; very friable; few fine roots; few fine and medium phosphatic pebbles and nodules of ironstone; few charcoal chips; strongly acid; clear wavy boundary.

B21t—28 to 32 inches; light yellowish brown (10YR 6/4) fine sandy loam; few fine faint light brownish gray mottles; weak fine and medium subangular blocky structure; very friable; few fine roots; few fine and medium phosphatic pebbles and nodules of ironstone; strongly acid; clear wavy boundary.

B22t—32 to 35 inches; yellowish brown (10YR 5/4) sandy clay loam; few fine prominent yellowish red, common fine prominent dusky red, and common medium distinct gray (10YR 6/1) mottles; moderate medium subangular blocky structure; friable; few fine roots; small patches of clay films on ped faces and clay flows along root channels; few firm dark red concretions; few fine and medium phosphatic pebbles; very strongly acid; clear wavy boundary.

B23tg—35 to 57 inches; gray (10YR 6/1) sandy clay loam; few medium distinct strong brown (7.5YR 5/8), few fine prominent red (2.5YR 4/8), and few medium prominent dark red (10R 3/6) mottles; moderate medium subangular blocky structure; friable; few roots; small patches of clay films along ped faces and root channels; about 3 percent plinthite; few dark brown concretions and phosphatic pebbles; very strongly acid; gradual wavy boundary.

B3g—57 to 69 inches; gray (10YR 5/1) sandy clay with few lenses of sandy loam; common medium distinct strong brown (7.5YR 5/8) mottles; weak medium subangular blocky structure; friable; few fine nodules of ironstone; about 2 percent plinthite; very strongly acid; gradual wavy boundary.

Cg—69 to 75 inches; gray (10YR 5/1) sandy clay loam with common lenses and pockets of sandy loam and loamy sand; common medium and coarse prominent yellowish red (5YR 4/8) mottles; massive; friable; very strongly acid.

The solum is 60 inches or more thick. It is, by volume, 0 to 5 percent weathered phosphatic pebbles, nodules or ironstone, and gravel or fragments of siliceous rock less than 3 inches in diameter. Reaction is very strongly acid to strongly acid in all horizons.

The A1 or Ap horizon is very dark gray (10YR 3/1), dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 10YR 5/1), or grayish brown (10YR 5/2) fine sand. It is 5 to 8 inches thick. If very dark gray (10YR 3/1), the A1 horizon is less than 6 inches thick.

The A2 horizon is brown (10YR 5/3), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), brownish yellow (10YR 6/6), very pale brown (10YR 7/3, 7/4), or yellowish brown (10YR 5/4) fine sand mottled with gray, light gray, pale brown, very pale brown, and yellowish brown. Thickness ranges from 16 to 32 inches.

The B2t and B3 horizons are 0 to 5 percent plinthite. The B21t horizon is pale brown (10YR 6/3), light yellowish brown (10YR 6/4), brownish yellow (10YR 6/6), yellowish brown (10YR 5/4, 5/8), brown (10YR 5/3), or very pale brown (10YR 7/3, 7/4) and has grayish and yellowish mottles. It is sandy loam or fine sandy loam and is 4 to 7 inches thick.

The matrix of the B22t horizon has the same color range and mottling as the B21t horizon, but also has few to common reddish mottles. This horizon is dominantly sandy clay loam, but in places is sandy loam. It is 3 to 7 inches thick.

The B23tg and B3g horizons are dominantly gray (N 5/0, 6/0; 10YR 5/1, 6/1), but range to light brownish gray (10YR 6/2) and are mottled with shades of yellow, brown, and red. The B23tg horizon is dominantly sandy clay loam, but in places is sandy loam. The B3g horizon is sandy clay loam or sandy clay and in some pedons has few fine lenses and pockets of sandy loam and loamy sand. The B23tg horizon is 20 to 36 inches thick, and the B3g is 12 to 18 inches thick.

The Cg horizon is mottled dark gray (N 4/0, 10YR 4/1), gray (N 5/0; 10YR 5/1, 6/1) or light gray (10YR 7/1) sandy loam or sandy clay loam. In places the sandy loam or sandy clay loam is mixed with few to common lenses and pockets of coarser and finer textured material.

Lochloosa soils are closely associated with Blichton, Flemington, Hague, Kendrick, Micanopy, and Sparr soils. They are better drained than Blichton soils. They have a thicker A horizon than Flemington soils and are better drained. They are somewhat poorly drained, whereas Hague and Kendrick soils are well drained. They have a thicker A horizon and a coarser textured Bt horizon than Micanopy soils. They have a thinner A horizon than Sparr soils.

**LoA—Lochloosa fine sand, 0 to 2 percent slopes.** This is a nearly level, somewhat poorly drained soil that occurs as small areas in the uplands. It has the profile described as representative of the series. The water table fluctuates between 30 and 60 inches for 1 month to 4 months during most years. For brief periods of about 1 week to 3 weeks, it rises to within about 15 inches of the surface. It recedes to a depth of more than 60 inches during drier periods.

Included with this soil in mapping are small areas, of a similar soil, where the subsoil is sandy clay; a few areas, also of a similar soil, where the upper 60 inches is more than 5 percent plinthite; and small areas of Arredondo, Blichton, Kendrick, Micanopy, and Sparr soils. Also included are spots where the soil is 5 to 20 percent weathered rock fragments less than 3 inches in diameter and a few areas of a similar soil that has a slope of 2 to 5 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, and a growth of hardwoods, including oak, dogwood, hickory, magnolia, and sweetgum. The understory is chiefly waxmyrtle and native grasses. Most areas are cleared and are in cultivated crops and improved pasture of the deep-rooting grasses and legumes grown in the area. Capability unit IIw-1; woodland group 2o1.

**LoB—Lochloosa fine sand, 2 to 5 percent slopes.** This is a somewhat poorly drained soil that occurs as small and large areas of the uplands. Surface runoff is medium, and the hazard of erosion is moderate. The water table fluctuates between 30 and 60 inches for 1 month to 3 months during most years. For periods of about 1 week to 3 weeks, it is within about 15 inches of the surface. It recedes to a depth of more than 60 inches during drier periods.

Included with this soil in mapping are small areas, of a similar soil, where the subsoil is sandy clay; small areas where the soil is more than 5 percent plinthite; and small areas of Arredondo, Kendrick, Blichton, Micanopy, and Sparr soils. Also included are small areas where the subsoil is 5 to 20 percent weathered phosphatic rock fragments less than 3 inches in diameter and a few small areas of a similar soil that has a slope of 0 to 2 or 5 to 8 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is chiefly slash pine, loblolly pine, oak, dogwood, hickory, magnolia, and sweetgum and an understory of native shrubs and grasses. Most areas are cleared and are in cultivated crops and improved pasture. Capability unit IIw–1; woodland group 2o1.

**LoC—Lochloosa fine sand, 5 to 8 percent slopes.** This is a sloping, somewhat poorly drained soil that occurs as small areas in the uplands. It has a profile similar to the one described as representative of the series, but it is slightly shallower over the underlying material and the surface layer is 1 inch to 3 inches thinner. Surface runoff is medium, and the hazard of erosion is moderate. The water table fluctuates between 30 and 60 inches for 1 month to 3 months during most years. For brief periods of about 1 week to 3 weeks, it is within about 15 inches of the surface. Wetness is caused by hillside seepage.

Included with this soil in mapping are areas of a similar soil that is more than 5 percent plinthite and small areas of Kendrick, Micanopy, Blichton, and Sparr soils. Also included are a few small areas, of a similar soil, where the slope is 2 to 5 percent and spots of moderately eroded soil. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is slash pine, loblolly pine, oak, dogwood, hickory, and sweetgum. Although many areas are still in native vegetation, the largest acreage is cleared and is in improved pasture of the deep-rooting grasses and legumes grown in the area. Capability unit IIIe–3; woodland group 2o1.

## Lynne Series

The Lynne series consists of nearly level, poorly drained soils that formed in thick deposits of sandy and loamy or clayey marine sediments. These soils occur as broad areas of the flatwoods. During most years the water table is within 10 inches of the surface for 1 month to 3 months and fluctuates between 10 and 40 inches for 3 to 6 months. During dry periods it recedes to a depth of more than 40 inches.

In a representative profile the surface layer is dark gray sand about 6 inches thick. The subsurface layer is sand about 14 inches thick. It is light brownish gray in the upper 7 inches and light gray in the lower 7 inches. Next, in sequence downward, is 4 inches of black, weakly cemented loamy sand that is well coated with organic matter; 7 inches of mixed black and dark reddish brown, weakly cemented loamy sand that is also well coated with organic matter; 2 inches of dark grayish brown sand mottled with gray; and 5 inches of mottled gray sandy clay loam. Below this to a depth of 67 inches is mottled gray sandy clay.

Available water capacity is low in the upper 20 inches, medium from 20 to 31 inches, low from 31 to 33 inches, and medium to high below. Permeability is rapid in the upper 20 inches, moderate from 20 to 31 inches, rapid from 31 to 33 inches, moderately slow to moderate from 33 to 43 inches, and slow below. Natural fertility is low in the upper 38 inches of sandy soil and medium in the sandy clay. Organic-matter content is low.

Lynne soils have limitations that severely restrict their use for general farm crops. If high level management is used and water is controlled, they are suited to commonly grown special crops. If well managed, they are well suited to improved pasture of commonly grown grasses and legumes.

Representative profile of Lynne sand, in an undisturbed area where the plant cover is longleaf pine, palmetto, gallberry, and wiregrass; about 1¼ miles east and 1½ miles south of junction of graded road (Sugar Road) with State Road 318, about 4 miles east of Citra, NW¼SW¼ sec. 29, T. 12 S., R. 23 E.

A1—0 to 6 inches; dark gray (N 4/0) sand, very dark gray (N 3/0) crushed; weak fine granular structure; very friable; many fine, medium, and large roots; common clean sand grains; very strongly acid; clear wavy boundary.

A21—6 to 13 inches; light brownish gray (10YR 6/2) sand; single grained; loose; many fine, medium, and large roots; many clean sand grains; very strongly acid; clear wavy boundary.

A22—13 to 20 inches; light gray (10YR 7/2) sand; few fine faint streaks of gray; single grained; loose, many fine, medium, and large roots; many clean sand grains; very strongly acid; clear wavy boundary.

B21h—20 to 24 inches; black (N 2/0) loamy sand; weak fine subangular blocky structure parting to moderate medium granular structure; weakly cemented; common fine and medium roots; many sand grains coated with organic matter; extremely acid; clear wavy boundary.

B22h—24 to 31 inches; mixed black (5YR 2/1) and dark reddish brown (5YR 2/2, 3/2) loamy sand; weak subangular blocky structure parting to moderate medium granular structure; weakly cemented; few fine roots; many sand grains coated with organic matter; extremely acid; clear wavy boundary.

A'2—31 to 33 inches; dark grayish brown (10YR 4/2) sand; few medium faint gray (10YR 6/1) streaks; single grained; loose; few fine roots; strongly acid; gradual wavy boundary.

B'21tg—33 to 38 inches; gray (10YR 5/1) sandy clay loam; few fine faint light grayish brown, few fine distinct yellowish brown, and few fine prominent dark reddish brown mottles; weak fine subangular blocky structure; friable; few faint clay films along faces of peds; very strongly acid; clear wavy boundary.

B'22tg—38 to 67 inches; gray (N 5/0) sandy clay; few medium prominent red (10R 4/6), few fine prominent dark reddish brown, and few fine distinct brownish yellow mottles; medium subangular blocky structure; firm, sticky and plastic; very few roots; few discontinuous clay films along faces of peds; very strongly acid.

The solum is 50 inches or more thick. Reaction ranges from extremely acid to strongly acid in all horizons.

The A horizon ranges from 12 to 29 inches in thickness. The A1 horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0), or dark grayish brown (10YR 4/2) sand. It is 4 to 6 inches thick. The A2 horizon is gray (10YR 5/1, 6/1), light gray (10YR 7/1, 7/2), or light brownish gray (10YR 6/2) sand or fine sand. It is dominantly 8 to 16 inches thick, but in a few pedons is 16 to 23 inches thick.

In most pedons a 1- to 2-inch transitional layer of very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), dark grayish brown (10YR 4/2), and dark brown (7.5YR 4/2) to brown (7.5YR 5/2) sand occurs between the base of the A2 horizon and the upper part of the B2h horizon. Many of the sand grains are uncoated.

The B2h horizon is black (N 2/0, 5YR 2/1, 10YR 2/1), dark reddish brown (5YR 2/2, 3/2, 3/3), dark brown (7.5YR 3/2), or very dark brown (10YR 2/2) sand or loamy sand 8 to 14 inches thick.

The A′2 horizon is dark gray (10YR 4/1), dark grayish brown (10YR 4/2), gray (10YR 5/1, 6/1), grayish brown (10YR 5/2), light brownish gray (10YR 6/2), light gray (10YR 7/1, 7/2; 5Y 7/1, 7/2), very pale brown (10YR 7/3), pale brown (10YR 6/3), brown (10YR 5/3), or pale yellow (5Y 7/3) sand or fine sand mottled in places with shades of gray, yellow, and brown. It is 2 to 4 inches thick.

The B′tg horizon occurs at a depth of 22 to 40 inches. It is gray (N 5/0, 6/0; 10YR 5/1, 6/1), light gray (10YR 7/1, 7/2; 2.5Y 7/2), or light brownish gray (2.5Y 6/2) mottled with shades of yellow, brown, and red. The B′21tg horizon is sandy clay loam or sandy clay. It is 4 to 10 inches thick. The B′22tg horizon is sandy clay. Depth to sandy clay is less than 39 inches. The upper 20 inches of the B′2tg horizon is, by weighted average, 35 percent or more clay.

In some pedons a B′3g horizon occurs. It has the same color range as the B′2tg horizon. It is sandy clay that in places has pockets and lenses of coarser textured material.

Lynne soils are closely associated with Eaton, Electra, Eureka, Jumper, and Pomona soils. They differ from Eaton soils in having a Bh horizon. They are more poorly drained than Electra soils and are not so deep over a Bh horizon. They are more poorly drained than Jumper soils and also differ from those soils in having a Bh horizon. They differ from Electra soils in having a Bh horizon and in having a thicker, coarser textured A horizon. Depth to the B′tg horizon is less than 40 inches, whereas in Pomona soils it is more than 40 inches.

**Ly—Lynne sand.** This is a poorly drained soil that occurs as small and large areas in the broad flatwoods. Slopes are 0 to 2 percent. The water table is within 10 inches of the surface for 3 to 6 months during most years. During dry periods it recedes to a depth of more than 40 inches.

Included with this soil in mapping are areas, of a similar soil, where the surface layer is fine sand. Also included are small areas of Eaton, Electra, Eureka, and Pomona soils. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of longleaf pine and slash pine and an understory of chiefly saw-palmetto, waxmyrtle, gallberry, and native grasses. Most areas are still in forest. A few areas, however, are cleared and are in improved pasture. Capability unit IIIw-9; woodland group 3w1.

## Martel Series

The Martel series consists of nearly level, very poorly drained soils that formed in thick beds of clayey marine sediments. These soils occur in slight depressions in broad areas of the flatwoods, on grassy prairies of the uplands, and on the flood plain of the Oklawaha River and Silver Run. The water table is within 10 inches of the surface for 6 to 12 months during most years. Most areas are covered with water for 6 months or more during most years. Areas on the flood plain are subject to flooding.

In a representative profile the surface layer is sandy clay loam about 19 inches thick. The upper 14 inches is black, and the lower 5 inches is very dark gray and has few light yellowish brown and dark gray mottles. The subsoil, between depths of 19 and 57 inches, is mottled dark gray. The upper 17 inches is sandy clay, and the lower 21 inches is clay. The underlying material to a depth of 72 inches is mottled gray sandy clay.

Available water capacity is high in the upper 19 inches and medium to high below. Permeability is moderate in the upper 19 inches and very slow from 19 to 72 inches. Natural fertility and organic-matter content are high in the upper 19 inches.

Martel soils are poorly suited to cultivated crops. If water is adequately drained and otherwise controlled, they are well suited to the improved pasture grasses and legumes grown in the area.

Representative profile of Martel sandy clay loam, in a cypress pond one-half mile north of State Road 316 and 2½ miles west of Fort McCoy, NW¼NW¼ sec. 16, T. 13 S., R. 23 E.

A11—0 to 14 inches; black (N 2/0) sandy clay loam; moderate medium granular structure; friable; common fine roots; very strongly acid; gradual wavy boundary.

A12—14 to 19 inches; very dark gray (N 3/0) sandy clay loam; few medium faint dark gray (N 4/0) and few fine distinct light yellowish brown mottles; strong medium granular structure; friable; few fine roots; strongly acid; clear wavy boundary.

B21tg—19 to 36 inches; dark gray (N 4/0) sandy clay; few fine prominent yellowish red and strong brown mottles; moderate medium subangular blocky structure; firm, sticky and plastic; few fine roots; few fine pockets of light gray (10YR 7/1) sand; few faint discontinuous clay films on faces of peds; very strongly acid; gradual wavy boundary.

B22tg—36 to 57 inches; dark gray (N 4/0) clay; few fine prominent yellowish red and strong brown mottles; moderate medium subangular blocky and weak fine angular structure; very firm, sticky and plastic; few fine lenses and pockets of light gray (10YR 7/1) sand; few faint discontinuous clay films on faces of peds; few fine and medium roots; very strongly acid; clear wavy boundary.

Cg—57 to 72 inches; gray (N 5/0) sandy clay; few medium prominent yellowish red (5YR 4/6) and few fine distinct brownish yellow mottles; massive; very firm, sticky and plastic; few fine and medium roots; few fine pockets of light gray (10YR 7/1) sand; very strongly acid.

The solum is 48 to 65 inches thick. Reaction is very strongly acid to strongly acid in all horizons.

The A horizon is black (N 2/0, 10YR 2/1) or very dark gray (N 3/0, 10YR 3/1) sandy clay loam. It ranges from 12 to 20 inches in thickness. The A12 horizon has yellowish mottles in many pedons.

The B2tg horizon is very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0, 10YR 4/1), or gray (N 5/0, 10YR 5/1, 6/1) and has few to common mottles in shades of yellow, brown, and red. It is sandy clay or clay and is 36 to 43 inches thick. The B3g horizon, if it occurs, is dark gray (N 4/0, 10YR 5/1) or gray (N 5/0, 6/0; 10YR 5/1, 6/1) sandy clay 4 to 8 inches thick. Few fine pockets of light gray (10YR 7/1) sand occur in the Btg and B3g horizons in some pedons.

The Cg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light gray (10YR 7/1) sandy clay or clay that in places is mottled. In places it has few to common lenses and pockets of coarser textured material.

Martel soils are closely associated with Bluff, Eaton, Eureka, Flemington, and Paisley soils. They are more acid than Bluff soils. They differ from Eaton soils in having a thinner A horizon and a thick, black A1 horizon. They are more poorly drained than Eureka soils and have a thicker, darker colored A horizon. They have a thicker dark colored A1 horizon than Flemington soils and are more poorly drained. They are more acid than Paisley soils and also differ from those soils in having a dark colored A horizon that is more than 10 inches thick.

**Ma—Martel sandy clay loam.** This is a very poorly drained soil in depressions and ponds in broad areas of the flatwoods, on grassy prairies in the rolling clayey uplands, and on the flood plain of the Oklawaha River and Silver Run. Slopes are 0 to 2 percent. The water table is within 10 inches of the surface for 6 to 12 months during most years. Most areas are covered with water for 6 months or more. Areas on the flood plain are subject to flooding.

Included with this soil in mapping are small areas of Eureka, Eaton, and Flemington soils. Also included are a few areas where the surface layer is sandy clay and spots where 6 to 30 inches of well decomposed organic material overlies sandy clay loam and sandy clay. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is chiefly cypress and water-tolerant grasses. Scattered pond pine and gum occur in some areas. Most areas are still in natural vegetation. A few areas are in improved pasture. Capability unit Vw-1; woodland group 2w3.

## Martel Variant

The Martel variant consists of nearly level, very poorly drained soils that formed in thick beds of loamy marine sediments. These soils occur as small ponded areas and large swamps within broad areas of the flatwoods. They are covered with water for 8 months or more during most years. The water table is within 10 inches of the surface, except during extended dry periods.

In a representative profile a layer of black, well decomposed muck about 11 inches thick is at the surface. The mineral surface layer is black sand about 16 inches thick. The mineral subsurface layer, to a depth of 31 inches, is sand. The upper 3 inches is dark gray, and the lower 12 inches is grayish brown. The subsoil is 31 inches thick. The upper 17 inches is gray heavy sandy clay loam, and the lower 14 inches is gray sandy clay.

Available water capacity is high in the organic and mineral surface layers, low in the subsurface layer, and medium in the subsoil. Permeability is rapid in the organic and mineral surface layers and the subsurface layer and moderately slow to slow in the subsoil. Natural fertility is medium in the organic and mineral surface layers, low in the subsurface layer, and medium in the subsoil. Organic-matter content is high in the organic and mineral surface layers and low in the subsurface layer and the subsoil.

Unless drained, these Martel soils are not suited to cultivated crops or improved pasture. If water is adequately drained and otherwise controlled, they are well suited to locally grown special crops and improved pasture.

The Martel variant in this survey area is mapped only with Pamlico soils.

Representative profile of the Martel variant, in an area of Pamlico-Martel association in a large cypress swamp on the south side of graded road about 4 miles northwest of Fort McCoy, SE¼SE¼ sec. 29, T. 12 S., R. 28 E.

Oa—11 inches to 0; black (N 2/0) well decomposed muck; 30 percent fibers, about 8 percent rubbed; weak medium granular structure; friable; common roots; sodium pyrophosphate extract is dark brown (10YR 4/3); extremely acid; abrupt wavy boundary.

A1—0 to 16 inches; black (N 2/0) sand; weak medium granular structure; friable; few roots; very strongly acid; clear wavy boundary.

A21—16 to 19 inches; dark gray (10YR 4/1) sand; few fine and medium very dark gray (10YR 3/1) and grayish brown (10YR 5/2) mottles; single grained; loose; few roots; very strongly acid; gradual wavy boundary.

A22—19 to 31 inches; grayish brown (10YR 5/2) sand; single grained; loose; very few roots; very strongly acid; clear and wavy boundary.

B21tg—31 to 48 inches; gray (N 5/0) sandy clay loam; weak fine subangular blocky structure; firm; few roots; few fine discontinuous clay films on ped faces; few fine and medium pockets of coarser textured material; very strongly acid; clear wavy boundary.

B22tg—48 to 62 inches; gray (N 5/0) sandy clay; moderate medium subangular blocky structure; firm; few fine discontinuous clay films on ped faces; few fine pockets of coarser textured material; very strongly acid.

The solum is 60 inches or more thick. Reaction ranges from extremely acid to strongly acid in all horizons.

The Oa horizon is black (N 2/0, 10YR 2/1), well decomposed sapric material. The fiber content is less than 10 percent after rubbing. Before rubbing, it is mostly less than 10 percent, but in a few pedons ranges to 20 percent. The Oa horizon is 6 to 15 inches thick.

The A1 horizon is black (N 2/0, 10YR 2/1) or very dark gray (N 3/0, 10YR 3/1). It is dominantly sand, but in places is loamy sand. It is 10 to 22 inches thick. The A2 horizon is gray (10YR 5/1, 6/1), light brownish gray (10YR 6/2), dark gray (N 4/0, 10YR 4/1), or grayish brown (10YR 5/2) sand. It is 10 to 20 inches thick.

The Btg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) sandy clay loam or sandy clay. It extends to a depth of more than 60 inches.

## Micanopy Series

The Micanopy series consists of gently sloping to sloping, somewhat poorly drained soils that formed in thick beds of clayey deposits influenced by phosphatic material. These soils occur as small areas in the uplands. The water table is perched between depths of approximately 20 and 60 inches for periods of 2 to 5 months during most years.

It recedes to a depth of more than 60 inches during drier months. Wet slopes are the result of hillside seepage.

In a representative profile the surface layer is very dark gray fine sand about 5 inches thick. The subsurface layer is brown loamy fine sand about 10 inches thick. The subsoil is more than 53 inches thick. It is, in sequence downward, 5 inches of yellowish brown sandy clay loam, 6 inches of mottled yellowish brown sandy clay, 27 inches of mottled gray sandy clay, 4 inches of mottled gray clay, and 11 inches of gray sandy clay mottled with strong brown and dark red.

Available water capacity is low in the upper 15 inches, medium from 15 to 20 inches, high from 20 to 57 inches, and medium from 57 to 68 inches. Permeability is rapid in the upper 15 inches, moderate from 15 to 20 inches, and slow below. Natural fertility is low in the upper 15 inches and medium between 15 and 68 inches. Organic-matter content is generally low.

Micanopy soils are well suited to most general farm crops and improved pasture of the locally grown deep-rooting grasses and legumes.

Representative profile of Micanopy fine sand, 2 to 5 percent slopes, about 3 miles northwest of Blichton and one-half mile northeast of U.S. Highway 27, NE¼SE¼ sec. 25, T. 13 S., R. 19 E.

Ap—0 to 5 inches; very dark gray (N 3/0) fine sand; moderate medium and coarse granular structure; very friable; common fine and few medium roots; very strongly acid; abrupt smooth boundary.

A2—5 to 15 inches; brown (10YR 5/3) loamy fine sand; moderate medium granular structure; very friable; common fine and few medium roots; common medium faint grayish brown (10YR 5/2) bodies of stripped sand grains in upper 2 inches; strongly acid; abrupt wavy boundary.

B21t—15 to 20 inches; yellowish brown (10YR 5/6) sandy clay loam; weak medium subangular blocky structure; friable; few fine and medium roots; clay bridging between sand grains; very strongly acid; clear wavy boundary.

B22t—20 to 26 inches; yellowish brown (10YR 5/4) sandy clay; common fine distinct gray and few fine prominent yellowish red mottles; moderate medium subangular blocky structure; friable; very few roots; faint discontinuous clay films on faces of peds; strongly acid; clear wavy boundary.

B23tg—26 to 45 inches; gray (10YR 5/1) sandy clay; many coarse distinct yellowish brown (10YR 5/8) mottles with prominent dark red (2.5YR 3/6) centers; moderate medium subangular blocky structure; firm, slightly sticky and slightly plastic; prominent continuous clay films on faces of peds; very strongly acid; clear wavy boundary.

B24tg—45 to 53 inches; gray (10YR 5/1) sandy clay; many medium and coarse prominent dark red (10YR 3/6) and few fine faint light gray and strong brown mottles; weak medium subangular blocky structure; firm, slightly sticky and slightly plastic; discontinuous faint clay films on faces of peds; few slickensdes; very strongly acid; clear wavy boundary.

B25tg—53 to 57 inches; gray (10YR 5/1) clay; many coarse faint gray (5Y 6/1) and few fine prominent red and strong brown mottles; weak medium subangular blocky structure; extremely firm, sticky and plastic; few clay films; few slickensides; very strongly acid; many stripped sand grains on prism faces; clear wavy boundary.

B3g—57 to 68 inches; mixed gray (10YR 5/1 and 5Y 6/1) sandy clay; common coarse strong brown (7.5YR 5/6) and common fine prominent dark red mottles; massive; very firm, sticky and plastic; few slickensides; few small fragments of hard white limestone; common clean sand grains; strongly acid.

The solum is 60 inches or more thick. Reaction is very strongly acid to strongly acid in all horizons. Fine and medium nodules of ironstone and gravel or fragments of leached phosphatic rock less than 3 inches in diameter occur in many pedons, but are less than 5 percent of the volume.

The A horizon is dominantly fine sand, but ranges to loamy fine sand. The A1 or Ap horizon is grayish brown (10YR 5/2), dark grayish brown (10YR 4/2), dark gray (N 4/0, 10YR 4/1), very dark gray (10YR 3/1, N 3/0), or very dark grayish brown (10YR 3/2). It is 4 to 8 inches thick. If very dark gray or very dark grayish brown, it is only 4 or 5 inches thick. The A2 horizon is brown (10YR 5/3), pale brown (10YR 6/3), or light yellowish brown (10YR 6/4). It is 7 to 10 inches thick.

The content of plinthite ranges from 0 to 5 percent in the Btg horizon. The B21t horizon is brown (10YR 5/3), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), or yellowish brown (10YR 5/4, 5/6) and in places is mottled with shades of yellow, brown, and gray. It is dominantly sandy clay loam, but ranges to sandy clay. It is 5 to 8 inches thick.

The B22t horizon is pale brown (10YR 6/3), brown (10YR 5/3), light yellowish brown (10YR 6/4), or yellowish brown (10YR 5/4, 5/6) mottled with gray. The texture is sandy clay, and thickness is 4 to 8 inches. In some pedons the B22t horizon does not occur.

In some pedons a B1 horizon occurs. It is sandy loam and has the same color range as the B21t horizon.

The B2tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light brownish gray (10YR 6/2) mottled with shades of red, brown, yellow, and gray. It is sandy clay or clay and is 30 to 42 inches thick.

The B3tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light gray (10YR 7/1) mottled with shades of gray, yellow, brown, and red. It is sandy clay. Some pedons have a few fine lenses of coarser textured material. The B3g horizon is 10 to 16 inches thick.

The Cg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1; 5Y 6/1), light gray (10YR 7/1; 5Y 7/1, 7/2), and light olive gray (5Y 6/2) sandy clay or clay mottled with shades of red, yellow, and brown.

Micanopy soils are closely associated with Blichton, Flemington, Fellowship, Lochloosa, and Zuber soils. They are better drained than Blichton soils and have a thinner A horizon and a finer textured Bt horizon. They are better drained than Flemington and Fellowship soils. Also, they do not have the thick, dark colored A horizon characteristic of Fellowship soils. They have a thinner A horizon and a finer textured Bt horizon than Lochloosa soils and are more poorly drained than Zuber soils.

**McB—Micanopy fine sand, 2 to 5 percent slopes.** This is a gently sloping, somewhat poorly drained soil that occurs as small areas in the uplands. It has the profile described as representative of the series. Surface runoff is medium, and the hazard of erosion is moderate. The water table is perched between depths of approximately 20 and 60 inches for periods of 2 to 5 months during most years. It recedes to a depth of more than 60 inches during dry periods.

Included with this soil in mapping are small areas, of a similar soil, where the subsoil is more than 5 percent plinthite or is sandy clay loam. Also included are small areas of Lochloosa, Flemington, and Zuber soils; spots, of a similar soil, where the upper 20 inches of the Bt horizon is, by volume, 5 to 35 percent rock fragments less than 3 inches in diameter; and small areas, also of a similar soil, where the slope is 0 to 2 or 5 to 8 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is slash pine, loblolly pine, water oak, laurel oak, white oak, sweetgum, and hickory and an understory of chiefly waxmyrtle and native grasses. Most areas are cleared and are in improved pasture. Capability unit IIw-2; woodland group 2o1.

**McC—Micanopy fine sand, 5 to 8 percent slopes.** This is a sloping, somewhat poorly drained soil that occurs as small areas in the uplands. It has a profile similar to the one described as representative of the series, but the surface layer is 1 inch to 3 inches thinner. Surface runoff is rapid, and the hazard of erosion is severe. Wetness is caused by hillside seepage. The water table fluctuates between 20 and 60 inches for 2 to 5 months during most years. It recedes to a depth of more than 60 inches during dry periods.

Included with this soil in mapping are small areas where at least the upper 20 inches of the subsoil is 5 to 35 percent weathered rock fragments less than 3 inches in diameter; small areas, of a similar soil, where the subsoil is sandy clay loam; and areas of a similar soil that is more than 5 percent plinthite. Also included are small areas of Lochloosa, Zuber, Flemington, and Blichton soils; small areas of a similar soil that has a slope of 2 to 5 percent; and small areas where the soil is eroded. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is chiefly slash pine, loblolly pine, white oak, laurel oak, sweetgum, hickory, waxmyrtle, and native grasses. Most areas are still in natural vegetation. Most cleared areas are in improved pasture. Capability unit IIIe–2; woodland group 2o1.

## Okeechobee Series

The Okeechobee series consists of nearly level, very poorly drained organic soils that formed largely in the remains of nonwoody, fibrous hydrophytic plants. These soils are in freshwater marshes and swamps. Under natural conditions, water is on the surface, except during extended dry periods. If water is controlled, the depth of the water table is regulated according to the needs of the crops.

In a representative profile the upper 32 inches is well decomposed, black muck. Between depths of 32 and 65 inches is very dark brown mucky peat.

Available water capacity is very high. Permeability is rapid. Natural fertility is medium, and the content of organic matter is very high.

Under natural conditions, Okeechobee soils are not suited to cultivated crops or improved pasture. If water is controlled, however, they are well suited to commonly grown crops and improved pasture.

Representative profile of Okeechobee muck, in a cultivated area in the southern part of the Oklawaha Farms, 2½ miles northwest of Moss Bluff, SW¼NW¼ sec. 21, T. 16 S., R. 24 E.

Oap—0 to 32 inches; well decomposed organic material (muck), black (N 2/0) unrubbed and rubbed; less than 10 percent fibers unrubbed and rubbed; moderate medium granular structure; friable; few fine roots; sodium pyrophosphate extract is brown (10YR 5/3); slightly acid; gradual wavy boundary.

Oe1—32 to 65 inches; partly decomposed organic material (mucky peat), very dark brown (10YR 2/2) unrubbed and rubbed; estimated 65 percent fibers, 25 percent rubbed; massive; friable; common fine roots; sodium pyrophosphate extract is light gray (10YR 7/2); neutral.

Measured by the Hellige-Truog method, reaction ranges from medium acid to mildly alkaline in all horizons. The organic horizon ranges from 52 to more than 75 inches in thickness. Fibers are dominantly of nonwoody plants, but woody fibers occur in some pedons.

The Oa horizon is black (N 2/0, 5YR 2/1, 10YR 2/1), very dark brown (10YR 2/2), or dark reddish brown (5YR 2/2). The fiber content is less than 33 percent before rubbing. In many pedons it is less than 10 percent before and after rubbing. The sodium pyrophosphate extract is very pale brown (10YR 7/4), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), brown (10YR 5/3), yellowish brown (10YR 5/4), dark yellowish brown (10YR 4/4), and dark brown (10YR 3/3). The Oa horizon is commonly 24 to 38 inches thick.

The Oe horizon is black (N 2/0, 5YR 2/1, 10YR 2/1), very dark gray (10YR 3/1), very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), and dark brown (7.5YR 3/2, 10YR 3/3) to dark reddish brown (5YR 2/2, 3/2, 3/3). The fiber content ranges from about 35 to 70 percent before rubbing and from 10 to 35 percent after rubbing. The sodium pyrophosphate extract is gray (10YR 7/1, 7/2), white (10YR 8/1, 8/2), and very pale brown (10YR 7/3). The Oe horizon is 26 to more than 60 inches thick.

The Oi horizon, if it occurs, is dark brown (10YR 3/3, 7.5YR 3/2) or dark reddish brown (5YR 3/2, 3/3). It is a fibric horizon that is about 70 to 80 percent fiber before rubbing and more than 60 percent fiber after rubbing. It is at a depth below 52 inches.

The underlying mineral material is 6 to 20 inches of sandy material over finer textured material or is sandy clay loam over light sandy clay.

Okeechobee soils are closely associated with Bluff, Terra Ceia, and Tomoka soils. They are of organic origin, whereas Bluff soils are of mineral origin. They have a hemic horizon within a depth of 52 inches, whereas Terra Ceia soils have sapric horizons to a depth of more than 52 inches. They have organic horizons that, combined, are more than 52 inches thick, whereas Tomoka soils have an organic horizon that is 16 to 40 inches thick.

**Ok—Okeechobee muck.** This is a very poorly drained organic soil that occurs as small and large areas in the marshes and swamps along the Oklawaha River. Slopes are 0 to 2 percent. Under natural conditions, water is on the surface, except during extended dry periods. If water is controlled, the depth of the water table is regulated according to the needs of the crops.

Included with this soil in mapping are small areas of a very poorly drained, nonacid soil that has an organic surface layer less than 16 inches deep over a sandy soil, sandy clay loam, or sandy clay. Also included are small areas of Anclote, Terra Ceia, Tomoka, and Bluff soils. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is either an aquatic plant cover of grasses, sedges, waterhyacinth, watercress, and sawgrass or a swamp hardwood growth of white bay, red maple, water tupelo, palm, and cypress. Most areas are still in natural vegetation. Some are cleared and are used for special crops. Capability unit IIIw–8; not assigned to a woodland group.

## Paisley Series

The Paisley series consists of nearly level, poorly drained soils that formed in beds of clayey marine sediments. These soils are in low-lying areas of the flatwoods. The water table is within 10 inches of the surface for 2 to 6 months during most years.

In a representative profile the surface layer is very dark gray loamy fine sand about 4 inches thick. The subsurface layer is grayish brown loamy fine sand about 5 inches thick. The subsoil extends to a depth of 69 inches. The upper 17 inches is mottled dark gray sandy clay, the next 19 inches is mottled gray sandy clay, and the lower 24 inches is mottled gray sandy clay that has a few fine pockets of soft carbonatic nodules. The underlying material to a depth of 80 inches is mottled gray and yellowish brown sandy clay that has many soft, white carbonatic nodules.

Available water capacity is low in the upper 9 inches and high from 9 to 80 inches. Permeability is rapid in the upper 9 inches and slow below. Natural fertility is medium. Organic-matter content in the surface layer is moderately low.

Under natural conditions, Paisley soils are poorly suited to general farm crops. Water control is necessary before they can be successfully cultivated, and crops are limited to those that are tolerant to slightly wet conditions. Paisley soils are well suited to improved pasture if water is controlled.

Representative profile of Paisley loamy fine sand, in an undisturbed area where the plant cover is loblolly pine, palm, sweetgum, bluestem, palmetto, briers, and wiregrass; one-half mile west of the Oklawaha River, 150 feet south of State Road 40, SW¼NW¼ sec. 3, T. 15 S., R. 23 E.

A1—0 to 4 inches; very dark gray (N 3/0) loamy fine sand, black (N 2/0) crushed and rubbed; moderate medium granular structure; very friable; numerous fine and few medium roots; medium acid; abrupt smooth boundary.

A2—4 to 9 inches; grayish brown (10YR 5/2) loamy fine sand; weak medium granular structure; very friable; common fine roots; medium acid; abrupt wavy boundary.

B21tg—9 to 26 inches; dark gray (N 4/0) sandy clay; few fine distinct yellowish brown mottles; weak coarse prismatic structure parting to moderate fine subangular blocky structure; firm, sticky and plastic; few fine and medium roots; few thin distinct clay films on faces of peds; discontinuous grayish brown stripped sand grain coatings on some prism faces; slightly acid in upper part, neutral in lower part; clear wavy boundary.

B22tg—26 to 45 inches; gray (N 5/0) sandy clay; common fine distinct strong brown mottles; moderate fine subangular blocky structure; firm, very sticky and plastic; few fine and medium roots; few thin distinct clay films on faces of peds; neutral; clear wavy boundary.

B23tg—45 to 57 inches; gray (5Y 6/1) sandy clay; common medium distinct brownish yellow (10YR 6/6) mottles; few fine distinct white pockets of carbonatic material and clean sand grains; moderate fine subangular blocky structure; firm, very sticky and plastic; few fine roots; continuous clay films on faces of peds; mildly alkaline; clear wavy boundary.

B3g—57 to 69 inches; gray (5Y 6/1) sandy clay; common medium distinct yellowish brown (10YR 5/8) mottles; few fine and medium distinct white (10YR 8/1) carbonatic nodules; weak fine subangular blocky structure; firm, sticky and plastic; very few fine roots; few thin clay films on faces of peds and clay flows along root channels; mildly alkaline; clear wavy boundary.

Cg—69 to 80 inches; mottled gray (10YR 6/1, N 5/0) and yellowish brown (10YR 5/8) sandy clay; common to many medium distinct white (10YR 8/1) carbonatic nodules; few fine pockets of clean sand grains; massive; firm, very sticky and plastic; mildly alkaline.

The solum is 42 to 72 inches or more thick. In many places the soil is underlain by soft carbonatic material or semihard lime material at a depth of 60 inches or more.

The A horizon is medium acid to slightly acid. The A1 or Ap horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10YR 3/1), very dark grayish brown (10YR 3/2), dark gray (N 4/0, 10YR 4/1), or gray (N 5/0, 10YR 5/1). It is 3 to 7 inches thick. If black, very dark gray, or very dark grayish brown, it is less than 6 inches thick. The A2 horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1), grayish brown (10YR 5/2), or light brownish gray (10YR 6/2). It is 2 to 12 inches thick.

The Btg and B3g horizons range from slightly acid to moderately alkaline. The B2tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1; 5Y 5/1, 6/1), light gray (N 7/0, 10YR 7/1), dark gray (N 4/0, 10YR 4/1), or grayish brown (2.5Y 5/2) sandy clay or clay mottled with shades of yellow, brown, and red. In some pedons it has a few fine lenses of sandy material. It is 27 to 57 inches thick. A ½- to 2½-inch transitional horizon of sandy clay loam having the same colors as the B2tg horizon occurs in some pedons.

The B3g horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1; 5Y 5/1, 6/1) or light gray (N 7/0, 10YR 7/1) mottled with shades of yellow, brown, and red. It is sandy clay or clay. It ranges from 10 to 18 inches in thickness. In many pedons few to common nodules of soft, white (10YR 8/1, 8/2) carbonatic material or semihard calcareous concretions occur in the lower part of the B2tg horizon and in the B3g horizon, commonly at a depth below 35 inches.

The Cg horizon has the same color and texture ranges as the B3 horizon. It has common or many, medium and large pockets of soft, white (10YR 8/1, 8/2) carbonatic material.

Paisley soils are closely associated with Bluff, Martel, Eureka, and Holopaw soils. They are better drained than Bluff soils and are more alkaline than Martel soils. They also differ from Bluff and Martel soils in not having a thick, black A horizon. They are more alkaline than Eureka soils. They have a thinner, finer textured A horizon and a finer textured Btg horizon than Holopaw soils.

**Pa—Paisley loamy fine sand.** This is a poorly drained soil that occurs as small and large areas in the flatwoods. Slopes are 0 to 2 percent. The water table is within 10 inches of the surface for 2 to 6 months during most years.

Included with this soil in mapping are small areas, of a smiliar soil, where the surface layer is sandy loam and small areas of Bluff, Eaton, Eureka, and Holopaw soils. Also included are small areas of a nonacid soil where the surface and subsurface layers combined are less than 20 inches thick and the subsoil is 3 to 6 inches of yellowish brown and gray sandy clay. In some areas along the Withlacooche River, the surface layer is fine sand, the surface layer and the subsoil have a few hard calcareous rock fragments about 2 to 50 millimeters in size, and a few limestone boulders are at the surface. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, swamp white oak, gum, and maple and an understory of chiefly waxmyrtle, cabbage palm, bluestems, palmetto, and native grasses. Most areas are still in native vegetation. A few, however, are cleared and are in improved pasture. Capability unit IIIw-6; woodland group 1w1.

## Pamlico Series

The Pamlico series consists of nearly level, very poorly drained organic soils that formed largely in nonwoody, fibrous hydrophytic plant remains mixed with some aquatic woody material. These soils occur as small ponded areas and as areas in large swamps within the broad flatwoods. The surface is covered with water for more than 8 months during most years. The water table is within 10 inches of the surface, except during extended dry periods.

In a representative profile the surface layer is about 31 inches of black, well decomposed muck that is less than 10 percent fibers. The underlying material to a depth of 49 inches is sand. The upper 5 inches is dark gray, and the lower 13 inches is light brownish gray. Below this to a depth of 60 inches or more is mottled gray sandy clay loam.

Available water capacity is very high in the upper 31 inches, low from 31 to 49 inches, and medium below. Permeability is rapid in the upper 49 inches and slow to moderately slow below. Natural fertility is medium. Organic-matter content is very high in the highly decomposed organic layer and low in the underlying mineral layers.

Under natural conditions, Pamlico soils are not suited to cultivated crops or improved pasture. If water is controlled, they are well suited to commonly grown special crops and to improved pasture.

Representative profile of Pamlico muck, in an area of Pamlico-Martel association, in a large swamp about 4 miles northwest of Fort McCoy and just south of graded road, SE¼SE¼ sec. 29, T. 12 S., R. 23 E.

Oa—0 to 31 inches; well decomposed organic material, black (N 2/0) unrubbed and rubbed; less than 10 percent fibers unrubbed and rubbed; moderate medium granular structure; friable; sodium pryophosphate extract color is dark brown (10YR 4/3); very strongly acid; abrupt wavy boundary.

IIC1—31 to 36 inches; dark gray (N 4/0) sand; single grained; loose; very strongly acid; clear wavy boundary.

IIC2—36 to 49 inches; light brownish gray (10YR 6/2) sand; common fine and medium faint gray (10YR 5/1) mottles; single grained; loose; very strongly acid; clear wavy boundary.

IIIC3—49 to 60 inches; mottled gray (10YR 5/1, 6/1) sandy clay loam; weak fine subangular blocky structure; firm; very strongly acid.

The Oa horizon is well decomposed organic material. It is black (N 2/0, 5YR 2/1, 10YR 2/1), very dark gray (N 3/0, 5YR 3/1, 10YR 3/1), very dark brown (10YR 2/2), or dark reddish brown (5YR 2/2, 3/2). The fiber content is less than 33 percent before rubbing and less than 10 percent after rubbing. The sodium pyrophosphate extract color is pale brown (10YR 6/3), light yellowish brown (10YR 6/4), brown (10YR 5/3), yellowish brown (10YR 5/4), or dark yellowish brown (10YR 4/4, 3/4). Thickness of this horizon is 16 to 44 inches. Measured by the Hellige-Truog method, reaction is extremely acid to very strongly acid.

The IIC horizon is gray (10YR 5/1, 6/1), dark gray (N 4/0, 10YR 4/1), light brownish gray (10YR 6/2), or grayish brown (10YR 5/2). The texture is sand. This horizon is 12 to 35 inches thick. Reaction ranges from extremely acid to strongly acid.

The IIIC is dark gray (N 4/0, 10YR 4/1), gray (N 5/0, 6/0; 10YR 5/1, 6/1) or is mottled with these colors. The texture is sandy clay loam or sandy clay. Reaction ranges from extremely acid to strongly acid.

The mean annual temperature of these soils is a few degrees warmer than is defined as the range for the Pamlico series, but this difference does not alter use or management.

**PB—Pamlico-Martel association.** This mapping unit consists of very poorly drained organic and mineral soils. It occurs as small ponded areas and as areas in large swamps within the broad flatwoods. Slopes are 0 to 2 percent. These soils are commonly covered with water for 8 months or more during most years and are so densely vegetated that they cannot be mapped separately. The water table is within 10 inches of the surface, except during extended dry periods.

About 38 percent of this mapping unit is the Pamlico soil. The organic surface layer is underlain by 10 to 35 inches of sand over sandy clay loam or sandy clay. In about 8 percent of the mapped areas, the sandy clay loam or sandy clay is within a depth of 51 inches.

About 32 percent of this mapping unit is the Martel variant and similar soils. The Martel variant is described under the heading Martel Variant.

About 15 percent of this mapping unit is a soil that has a black, brown, or dark reddish brown, well decomposed organic layer 6 to 15 inches deep over 10 to 20 inches of black or very dark gray sand, loamy sand, or loamy fine sand. The subsoil to a depth of 60 inches or more is gray or dark gray sandy clay loam or sandy clay.

Included in this unit in mapping are areas where the muck is more than 50 inches deep over sandy material and sandy clay loam, some areas where the mucky peat and peat are 16 to 50 inches deep over sandy and loamy material, and spots where the soil is 16 to 30 inches of well decomposed organic material over 3 to 10 inches of sand over clayey material. Also included are some areas of Placid and Pompano soils and a few areas of a slightly acid to moderately alkaline soil that has a black loamy sand or sandy loam surface layer 10 to 15 inches deep over a sandy clay or clay subsoil. Included soils make up about 15 percent of the unit.

This mapping unit is too wet for crops and improved pasture. The natural vegetation is chiefly cypress, gum, and water-tolerant grasses. Capability unit IIIw-8; not assigned to a woodland group.

## Pedro Series

The Pedro series consists of nearly level to gently sloping, well drained soils that formed in thin beds of sandy and loamy marine sediments. These soils occur as broad areas in the upland. The water table is at a depth of more than 60 inches.

In a representative profile the surface layer is gray fine sand about 5 inches thick. The subsurface layer is pale brown fine sand about 8 inches thick. The subsoil is yellowish brown sandy clay loam about 3 inches thick. It is, by volume, 5 percent fragments of limestone less than 15 millimeters in size. White, partly decomposed limestone is at a depth of 16 inches. It is soft enough to be cut with a spade and has a few fragments of hard limestone. Hard limestone is at a depth of 25 inches.

Available water capacity is low to very low in the upper 13 inches and medium from 13 to 16 inches. Permeability is rapid in the upper 13 inches and moderately rapid from 13 to 16 inches. Natural fertility and organic-matter content are low.

Pedro soils are moderately well suited to improved pasture of the grasses commonly grown in the area.

Representative profile of Pedro fine sand, in an area of Pedro-Arredondo complex, 0 to 5 percent slopes, in a wooded area 500 feet east of State Road 335 and 3½ miles north of intersection of U.S. Highway 27 and State Road 335, SW¼NW¼ sec. 27, T. 12 S., R. 19 E.

A1—0 to 5 inches; gray (10YR 5/1) fine sand; weak fine granular structure; very friable; few fine and medium roots; medium acid; clear wavy boundary.

A2—5 to 13 inches; pale brown (10YR 6/3) fine sand; single grained; loose; few fine and medium roots; few fine clean light gray sand grains in streaks; medium acid; clear irregular boundary.

Bt—13 to 16 inches; yellowish brown (10YR 5/8) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; sand grains coated and bridged with clay; few fragments of limestone less than 15 millimeters in diameter and about 5 percent by volume; mildly alkaline; abrupt irregular boundary.

IIR1—16 to 25 inches; white (10YR 8/1) partly decomposed limestone soft enough to be cut with a spade; few fine and medium fragments of hard limestone; strongly alkaline.

IIR2—25 inches+; hard limestone.

The soil is cyclic. The depth to soft, partly decomposed limestone is 6 to 20 inches, but within the pedon ranges to about 63 inches in solution holes. In some pedons, intrusions of hard limestone are at a depth of 6 inches and outcrops of rock are common.

The A horizon ranges from strongly acid to slightly acid. The A1 or Ap horizon is dark gray (10YR 4/1) or gray (10YR 5/1) fine sand 3 to 6 inches thick. The A2 horizon is very pale brown (10YR 7/3, 7/4), pale brown (10YR 6/3), or light yellowish brown (10YR 6/4) fine sand. Thickness is dominantly 4 to 12 inches, but within the pedon ranges to about 44 inches in solution holes. The entire range in thickness, or cycle, is 1 inch to 44 inches within the pedon.

The B horizon ranges from slightly acid to mildly alkaline. It is light yellowish brown (10YR 5/6, 5/8), brownish yellow (10YR 6/6, 6/8), or strong brown (7.5YR 5/6, 5/8). The texture is sandy clay loam. The entire range in thickness, or cycle, is 0 to 24 inches. The B horizon is 3 to 24 inches thick and meets the requirements for an argillic horizon in about 5 to 60 percent of the pedon. In 20 to 35 percent of each pedon, it meets all requirements for an argillic horizon except for thickness. In about 15 to 30 percent, the B horizon does not occur and the sandy material is on the surface of the soft, partly decomposed limestone. In some pedons it has few or common, fine and medium fragments of soft and hard limestone.

Th IIR1 layer is white, partly decomposed limestone that is soft enough to be cut with a spade and has fragments of hard limestone. It is commonly 4 to 54 inches thick. The entire range in thickness, or cycle, is 0 to 54 inches. Below the IIR1 layer is a IIR2 layer of hard limestone.

Pedro soils are associated with Arredondo, Candler, Kendrick, Lochloosa, and Sparr soils. They have a thin solum that is underlain by limestone, whereas Arredondo soils have a continuous Bt horizon of sandy loam or sandy clay loam between depths of 40 and 80 inches, Candler soils are sandy to a depth of more than 80 inches, Kendrick and Lochloosa soils have an A horizon that is 20 to 40 inches deep over a continuous Bt horizon of sandy clay loam that extends to a depth of 60 inches or more, and Sparr soils have a sandy A horizon that is 40 to 80 inches deep over sandy clay loam. Pedro soils are better drained than Lochloosa and Sparr soils.

**PeB—Pedro-Arredondo complex, 0 to 5 percent slopes.** This mapping unit consists of well drained, nearly level to gently sloping soils of the upland. Sharp breaks between areas of these soils commonly occur within very short distances. A few rock fragments more than 3 inches in size and boulders occur in many pedons. Large rock fragments and boulders also occur at the surface in many areas (fig. 4). The water table is at a depth of more than 60 inches.

About 50 percent of this mapping unit is a Pedro soil that has sandy surface and subsurface layers and a thin loamy subsoil underlain by partly decomposed, soft limestone. About 39 percent is an Arredondo soil that is 40 to 80 inches of sand or fine sand over loamy sand, sandy loam, or sandy clay loam.

Included in this unit in mapping is a soil that has a dark gray or gray fine sand surface layer 4 to 8 inches thick, a pale brown or very pale brown sandy subsurface layer 20 to 40 inches thick, and a yellowish brown or strong brown sandy loam and sandy clay loam subsoil 25 to 34 inches thick. The subsoil is underlain by soft limestone. Also included are spots where a dark gray sandy surface layer and a pale brown sandy subsurface layer combined are 16 to 22 inches deep over a yellowish brown or strong brown sandy clay subsoil that extends to a depth of 60 inches or more. A few spots of Candler, Sparr, and Lochloosa soils occur in some areas. The extent of included soils varies, but averages about 11 percent of the unit.

The natural vegetation is a forest of slash pine, longleaf pine, laurel oak, live oak, post oak, and dogwood and an understory of chiefly scattered palmetto, hawthorne, briers, and native grasses. Most areas have been cleared and are used for crops and improved pasture. Capability unit IIIs-1; woodland group 3s1.

## Placid Series

The Placid series consists of nearly level, very poorly drained sandy soils that formed in thick beds of sandy marine deposits. These soils are in small depressions and along poorly defined drainageways of the flatwoods and in shallow depressions on sandy ridges. The water table is within 10 inches of the surface for more than 6 months during most years. Most depressions are covered with water for 6 months or more annually.

In a representative profile the surface layer is sand about 19 inches thick. The upper 12 inches is black, the next 4 inches is very dark gray, and the lower 3 inches is dark gray. Below this to a depth of 92 inches is light gray sand mottled with gray and dark gray.

Available water capacity is high in the upper 19 inches and low below. Permeability is rapid to a depth of more than 80 inches. Natural fertility and organic-matter content are high in the upper 19 inches and low below.

Under natural conditions, Placid soils are poorly suited to crops or improved pasture. Under good management and adequate water control, yields of commonly grown special crops are high and pasture of locally grown grasses and legumes is of good quality.

Representative profile of Placid sand, in a large swamp 200 feet west of State Road 25, 0.8 mile north of East Lake Weir, NW¼NE¼ sec. 9, T. 17 S., R. 24 E.

A11—0 to 3 inches; black (N 2/0) sand; moderate medium granular structure; very friable; common fine roots; about 15 percent organic matter; very strongly acid; abrupt wavy boundary.

A12—3 to 12 inches; black (N 2/0) sand; moderate medium granular structure; very friable; many fine roots; less than 15 percent organic matter; very strongly acid; clear wavy boundary.

A13—12 to 16 inches; very dark gray (N 3/0) sand; few medium faint dark gray (10YR 4/1) mottles; moderate medium granular structure; very friable; many fine roots; very strongly acid; clear wavy boundary.

A14—16 to 19 inches; dark gray (N 4/0) sand; common

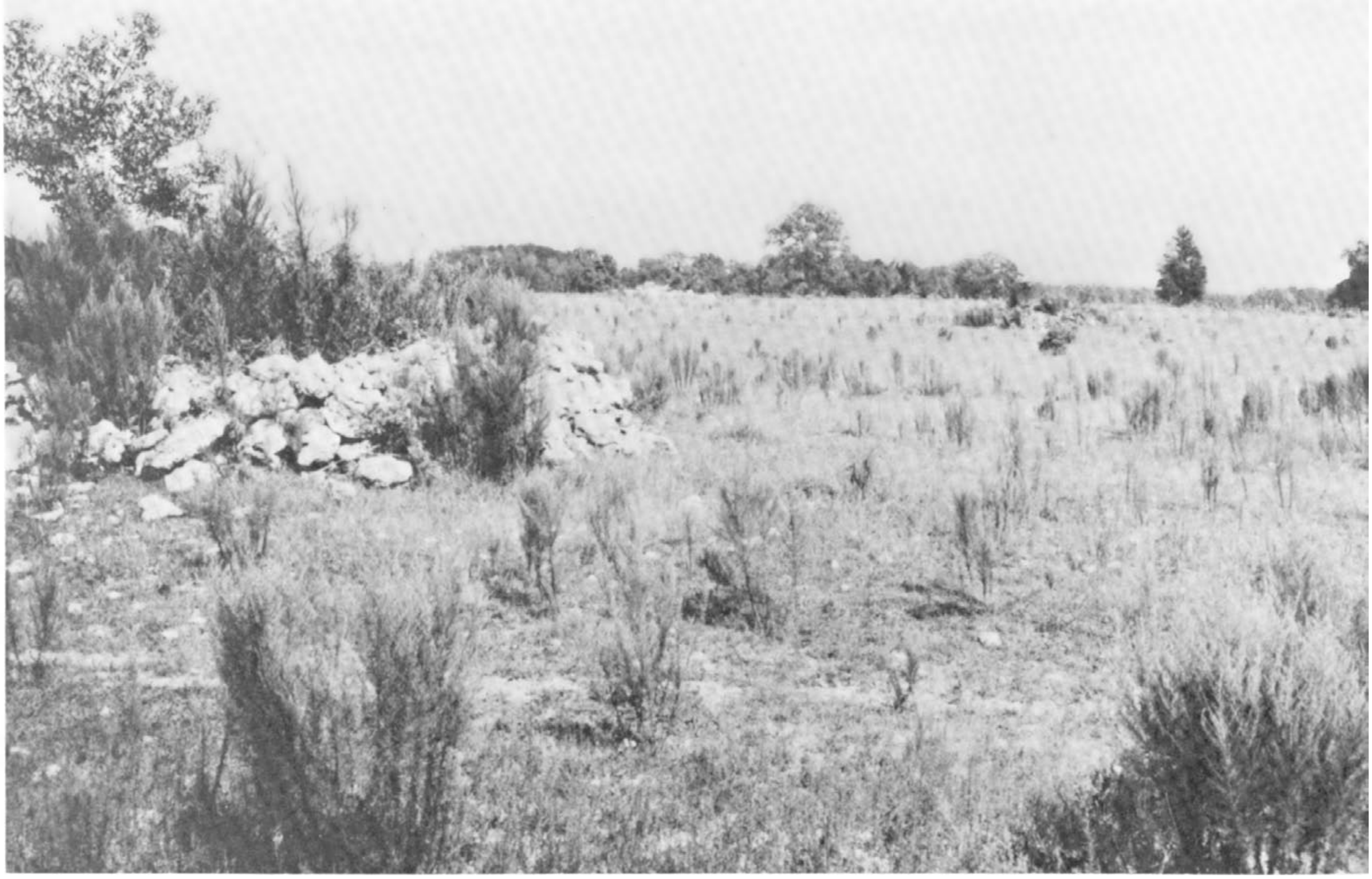

*Figure 4.*—Large mounds of boulders removed from the surface of an area of Pedro-Arredondo complex, 0 to 5 percent slopes. Boulders at the surface are a severe hazard to farm machinery.

medium faint gray (10YR 5/1) mottles; single grained; loose; few roots; very strongly acid; clear wavy boundary.

C—19 to 92 inches; light gray (10YR 7/1) sand; few medium faint gray (10YR 6/1) and dark gray (10YR 4/1) mottles; few fine distinct very dark grayish brown and dark brown splotches in lower few inches; single grained; loose; sand grains uncoated; very strongly acid.

Reaction ranges from extremely acid to strongly acid in all horizons.

The A horizon is 12 to 18 inches thick in most pedons, but ranges from 10 to 24 inches. The A11, A12, and A13 horizons are black (N 2/0, 10YR 2/1), very dark brown (10YR 2/2), very dark gray (N 3/0, 10YR 3/1), or very dark grayish brown (10YR 3/2) sand. The A14 horizon is dark gray (N 4/0, 10YR 4/1) sand. In some pedons it does not occur. Organic-matter content is less than 20 percent.

The C horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1), grayish brown (10YR 5/2), light grayish brown (10YR 6/2), or light gray (10YR 7/1) mottled with shades of gray and brown. In places the lower part has thin streaks and small splotches of very dark grayish brown (10YR 3/2), dark grayish brown (10YR 4/2), and dark brown (10YR 4/3). The C horizon is sand, fine sand, or loamy fine sand, the sand grains of which are uncoated. It is 70 inches or more thick.

Placid soils are closely associated with Adamsville, Electra, Pomona, and Pompano soils. They are more poorly drained than Adamsville and Pompano soils and have a thicker dark colored A horizon. They are also more poorly drained than Electra and Pomona soils and do not have the Bh horizon characteristic of those soils.

**Pm—Placid sand.** This is a very poorly drained soil in small depressions and along poorly defined drainageways of the flatwoods and in shallow depressions on sandy ridges. It has the profile described as representative of the series. Slopes are 0 to 2 percent. The water table is within 10 inches of the surface for more than 6 months during most years. Most depressions are covered with water for 6 months or more annually. Surface water is usually 2 to 18 inches deep, but in places is as deep as 18 to 30 inches during wet periods.

Included with this soil in mapping are small areas of Adamsville, Pompano, and Pomona soils; small areas where organic material is 10 to 24 inches deep over sandy material; and some areas of a very poorly drained soil where a thick, dark colored surface layer is underlain by sandy clay loam at a depth below 40 to 80 inches. Also included are small areas of a very poorly drained soil where a black or very dark gray sandy surface layer 24 to 32 inches thick is underlain by gray sandy material to a depth of more than 80 inches. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is cypress, bay, and gum, or water-tolerant grasses. Almost all areas are still in native vegetation. A few small areas are in pasture. Capability unit IIIw-4; woodland group 4w1.

**Pn—Placid-Pompano-Pomona complex.** This mapping unit consists of poorly drained and very poorly drained soils. It is on broad flats adjacent to large ponds and swamps in the flatwoods and in shallow depressions of the sandy uplands. It is mostly on the broad flats in the northeastern part of the survey area and in the poorly drained and very poorly drained areas adjacent to the swamps. It is 37 percent Placid soils, 31 percent Pompano soils, and 26 percent Pomona soils. Pomona soils are slightly higher on the landscape than Placid and Pompano soils. Slopes are 0 to 2 percent.

The water table is within 10 inches of the surface for about 4 to 8 months during most years. Slight depressions, mostly in the southwestern part of the survey area, are covered with water for 3 to 6 months during most years.

Included in this unit in mapping are areas of Lynne soils and small areas of a poorly drained soil where a sandy surface layer is underlain by sandy loam and sandy clay loam at a depth of 40 to 60 inches. Also included are areas of a poorly drained sandy soil having a weakly cemented layer at a depth below 30 inches. Included soils make up 10 percent or less of this unit.

The natural vegetation on the broad flats is slash pine, longleaf pine, and pond pine and an understory of saw-palmetto, gallberry, waxmyrtle, and native grasses. In the depressions it is commonly water-tolerant grasses. All of this unit is still in natural vegetation. Capability unit IVw-2; woodland group 4w1.

## Pomona Series

The Pomona series consists of nearly level, poorly drained soils that formed in beds of sandy and loamy marine deposits. These soils occur as broad areas of the flatwoods and as areas adjacent to wet depressions on sandy ridges. During most years the water table is within 10 inches of the surface for 1 month to 3 months and fluctuates between 10 and 40 inches for 6 months or more. During dry seasons it recedes to a depth of more than 40 inches.

In a representative profile the surface layer is very dark gray sand about 5 inches thick. The subsurface layer is 21 inches of sand. The upper 7 inches is gray mottled with dark gray, and the lower 14 inches is light gray mottled with light brownish gray. Below this, in sequence downward, is 3 inches of mixed very dark gray and dark reddish brown, weakly cemented sand that is well coated with organic matter; 7 inches of very dark gray, weakly cemented sand that is also well coated with organic matter; 3 inches of mixed dark brown and dark grayish brown sand mottled with dark reddish brown; 12 inches of brown sand; 7 inches of mottled gray sandy clay loam; and 14 inches of mottled gray sandy clay.

Available water capacity is low to very low in the upper 26 inches, medium from 26 to 39 inches, low to very low from 39 to 51 inches, and medium to high below. Permeability is rapid in the upper 26 inches, moderate from 26 to 39 inches, rapid from 39 to 51 inches, and moderately slow below. Natural fertility and organic-matter content are low.

Pomona soils are poorly suited to general farm crops. If water is controlled, they are moderately well suited to locally grown special crops. They are moderately well suited to improved pasture.

Representative profile of Pomona sand, in an undisturbed area where the plant cover is slash pine, longleaf pine, palmetto, gallberry, waxmyrtle, and native grasses; 6 miles north of Fort McCoy, 1.6 miles west of State Road 315 and north of graded road (Sugar Road), NW¼NW¼ sec. 21, T. 12 S., R. 23 E.

A1—0 to 5 inches; very dark gray (10YR 3/1) sand; weak fine granular structure; very friable; common fine roots; very strongly acid; clear wavy boundary.

A21—5 to 12 inches; gray (10YR 6/1) sand; common medium faint dark gray (10YR 4/1) mottles; single grained; loose; common fine roots; many clean sand grains; very strongly acid; clear wavy boundary.

A22—12 to 26 inches; light gray (10YR 7/1) sand; few fine and medium faint light brownish gray (10YR 6/2) mottles; single grained; loose; common fine roots; many clean sand grains; very strongly acid; abrupt wavy boundary.

B21h—26 to 29 inches; mixed very dark gray (5YR 3/1) and dark reddish brown (5YR 3/3) sand; weak moderate medium granular structure; weakly cemented; few fine roots; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

B22h—29 to 36 inches; very dark gray (5YR 3/1) sand; few fine faint dark reddish brown mottles; weak medium subangular blocky structure parting to moderate medium granular structure; weakly cemented; few roots; sand grains coated with organic matter; very strongly acid; clear wavy boundary.

B23h—36 to 39 inches; mixed dark brown (7.5YR 3/2) dark grayish brown (10YR 4/2) and dark reddish brown (5YR 3/2) sand; weak medium granular structure; very friable; few roots; very strongly acid; clear wavy boundary.

A'2—39 to 51 inches; brown (10YR 5/3) sand; single grained; loose; few roots; very strongly acid; clear wavy boundary.

B'21tg—51 to 58 inches; gray (10 YR 6/1) sandy clay loam; few fine and medium faint yellow (10YR 7/6) and few medium prominent yellowish red (5YR 4/8) mottles; weak medium subangular blocky structure; friable; few faint discontinuous clay films along faces of peds; very strongly acid; clear wavy boundary.

B'22tg—58 to 72 inches; gray (10YR 5/1) light sandy clay; few fine distinct light yellowish brown and few fine prominent yellowish red mottles; moderate to medium subangular blocky structure; firm; few distinct clay films on faces of peds; strongly acid.

The solum is 60 or more inches thick. Reaction ranges from extremely acid to strongly acid in all horizons. Depth to the Bt horizon ranges from 40 to 80 inches.

The A horizon is 19 to 29 inches thick. The A1 horizon is black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 10YR 3/1), or dark gray (N 4/0, 10YR 4/1) sand 4 to 6 inches thick. The A2 horizon is gray (10YR 5/1, 6/1), light gray (10YR 7/1, 7/2), or white (10YR 8/1, 8/2) sand mottled in some pedons with shades of gray, yellow, and brown. Vertical streaks of dark gray occur in the upper part of this horizon in some pedons. This horizon is 15 to 23 inches thick.

A 1- to 2-inch transitional layer occurs between the A-2 and the B2h horizons in some pedons. It is dominantly very dark grayish brown (10YR 3/2), dark grayish brown (10YR 3/2), dark grayish brown (10YR 4/2), dark gray (10YR 4/1), black (N 2/0, 10YR 2/1), or very dark gray (10YR 3/1). The texture is sand. Many of the sand grains are uncoated.

The B2h horizon is black (N 2/0, 5YR 2/1, 10YR 2/1), very dark gray (5YR 3/1), dark reddish brown (5YR 2/2, 3/2, 3/3), dark brown (7.5YR 3/2), or very dark brown (10YR 2/2) sand or fine sand. It is 10 to 18 inches thick.

The B23h horizon is dark brown (10YR 3/3, 4/3; 7.5YR 3/2, 4/2, 4/4), dark yellowish brown (10YR 4/4), and dark grayish brown (10YR 4/2) sand or fine sand that in places is mottled. It is 3 to 8 inches thick.

The A'2 horizon is brown (10YR 5/3), pale brown (10YR 6/3), grayish brown (10YR 5/2), light brownish gray (10YR 6/2), gray (10YR 5/1, 6/1), or light gray (10YR 7/1, 7/2). In places these colors are mixed. This horizon is sand. It ranges from 8 to 24 inches in thickness.

The B'tg horizon is sandy clay loam, light sandy clay, or sandy loam mottled with shades of yellow, brown, and red. The B'21tg horizon is gray (10YR 5/1, 6/1) or light gray (10YR 7/1, 7/2) and is 5 to 12 inches thick. The B'22tg horizon is gray (10YR 5/1, 6/1; N 5/0, 6/0), or light gray (10YR 7/1, 7/2; 5YR 7/1, 7/2) and is 5 to 15 inches thick.

A few pedons have a B'1g horizon that is 3 to 5 inches thick. The texture is sandy loam. The color is similar to that of the B'2tg horizon.

The B'3 horizon, if it occurs, is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or light gray (10YR 7/1, 7/2) sandy clay mottled with shades of yellow, brown, and red.

Pomona soils are closely associated with Adamsville, Electra, Holopaw, Lynne, Placid, and Pompano soils. They are more poorly drained than Adamsville soils, and they have a Bh horizon, which does not occur in those soils. They are more poorly drained than Electra soils and are shallower over a Bh horizon. They differ from Lynne soils in not having a B't horizon within a depth of 40 inches. They are more acid and have a lower base saturation than Holopaw soils, and they have a Bh horizon, which does not occur in those soils. They differ from Placid and Pompano soils in having a Bh horizon. Also, they are better drained than Placid soils.

**Po—Pomona sand.** This is a poorly drained soil that occurs as small and large areas in the flatwoods and as small areas adjacent to wet depressions on sandy ridges. Slopes are 0 to 2 percent. During most years the water table is within 10 inches of the surface for 1 month to 3 months and fluctuates between 10 and 40 inches for 6 months or more. During dry periods it recedes to a depth of more than 40 inches.

Included with this soil in mapping are small areas, of a similar soil, where the surface layer is fine sand or a weakly cemented layer is at a depth of 30 to 40 inches. Also included are small areas of Electra, Lynne, Pompano, and Placid soils. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is a forest of longleaf pine and slash pine and an understory of saw-palmetto, waxmyrtle, gallberry, runner oak, and native grasses. Most areas are still in natural vegetation. A few areas are cleared and are in improved pasture. Capability unit IVw-2; woodland group 3w1.

## Pompano Series

The Pompano series consists of nearly level, poorly drained soils that formed in thick beds of sandy marine deposits. These soils occur as small areas on broad flats, in depressions and sloughs of the flatwoods, and in depressions in sandy ridges. The water table is within 10 inches of the surface for cumulative periods of 2 to more than 6 months during most years. Depressions are covered with water for more than 4 months during most years.

In a representative profile the surface layer is sand about 5 inches thick. The upper 3 inches is black, and the lower 2 inches is dark gray. The underlying material to a depth of more than 80 inches is sand. The upper 7 inches is gray mottled with grayish brown, the next 62 inches is white, and the lower 6 inches is white streaked with dark grayish brown.

Available water capacity is very low. Permeability is very rapid. Natural fertility and organic-matter content are low.

Pompano soils are poorly suited to general farm crops. If water is controlled, they are moderately well suited to locally grown special crops. They are moderately well suited to improved pasture of the grasses and legumes grown in the area.

Representative profile of Pompano sand, in an undisturbed area where the plant cover is slash pine, gallberry, myrtle, and wiregrass; about 1 mile southeast of Oklawaha and 200 feet east of State Road 25, SE¼SE¼ sec. 4, T. 17 S., R. 24 E.

A11—0 to 3 inches; black (N 2/0) sand; weak medium granular structure; very friable; many fine and medium roots; less than 10 percent organic matter; many clean sand grains; very strongly acid; abrupt wavy boundary.

A12—3 to 5 inches; dark gray (10YR 4/1) sand; single grained; loose; many fine and medium roots; many clean sand grains; very strongly acid; clear wavy boundary.

C1—5 to 12 inches; gray (10YR 6/1) sand; few fine faint grayish brown mottles; single grained; loose; common fine and medium roots; water table at 10 inches; many clean sand grains; very strongly acid; clear wavy boundary.

C2—12 to 74 inches; white (10YR 8/1) sand; single grained; loose; few roots in upper part; many clean sand grains; very strongly acid; gradual wavy boundary.

C3—74 to 80 inches; white (10YR 8/1) sand; few to common medium distinct dark grayish brown (10YR 4/2) streaks; single grained; loose; many clean sand grains; very strongly acid.

The texture is sand to a depth of more than 80 inches. The content of silt and clay is less than 5 percent between depths of 10 and 40 inches. Reaction ranges from very strongly acid to slightly acid in all horizons. Most pedons, however, are very strongly acid or strongly acid in the upper 40 inches.

The A1 horizon is black (N 2/0), very dark gray (N 3/0, 10YR 3/1), and dark gray (N 4/0, 10YR 4/1) to gray (N 5/0, 10YR 5/1). Many sand grains are stripped of coatings and appear as clean quartz grains. The A1 horizon is 3 to 5 inches thick.

The C horizon ranges from gray (10YR 5/1, 6/1) and light gray (10YR 7/1, 7/2) to white (10YR 8/1) and in some pedons has a few mottles in shades of gray, yellow, and brown. Many sand grains are clean. The C horizon is more than 75 inches thick.

Pompano soils are associated with Adamsville, Anclote, Astatula, Candler, Pomona, and Placid soils. They are more poorly drained than Adamsville, Astatula, and Candler soils. They do not have the Bh horizon characteristic of Pomona soils. They are poorly drained, whereas Anclote and Placid soils are very poorly drained, and they do not have the thick A1 horizon characteristic of those soils.

**Pp—Pompano sand.** This is a poorly drained soil that occurs as small areas in the flatwoods. It has the profile described as representative of the series. Slopes are 0 to 2 percent. The water table is within 10 inches of the surface for 2 to 6 months during most years. It is within 30 inches of the surface for cumulative periods of more than 6 months.

Included with this soil in mapping are a few areas, of a similar soil, where the texture is fine sand. Also included are small areas of Pomona and Placid soils, spots where sandy clay loam is at a depth of 40 to 80 inches, and a few small areas of a similar soil that has a slope of 2 to 5 percent. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is slash pine, gallberry, myrtle, and native grasses. Capability unit IVw–3; woodland group 4w1.

**Pr—Pompano sand, ponded.** This is a very poorly drained soil in shallow depressions and sloughs of the flatwoods and sandy ridges. It is similar to Pompano sand, but the water table is within 10 inches of the surface for more than 6 months during most years. The surface is covered with water for more than 4 months annually. Slopes are 0 to 2 percent.

Included with this soil in mapping are a few small areas, of a similar soil, where the dark colored surface layer is 5 to 10 inches thick or the texture is fine sand. Also included are spots of Anclote, Pomona, and Placid soils. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is commonly water-tolerant grasses and, in some areas, a sparse growth of cypress, gum, and bay. Most areas are still in native vegetation. Capability unit VIIw–2; woodland group 4w1.

## Sparr Series

The Sparr series consists of nearly level to sloping, somewhat poorly drained soils that formed in thick beds of sandy and loamy marine sediments. These soils occur as broad areas of the flatwoods and as areas on broad ridges of the uplands. The water table fluctuates between 30 and 60 inches for 1 month to 4 months during most years. For brief periods it is at a depth of about 20 to 30 inches. During dry periods it is at a depth of more than 60 inches.

In a representative profile the surface layer is fine sand about 8 inches thick. The upper 5 inches is dark gray, and the lower 3 inches is mixed dark gray, grayish brown, and pale brown. The subsurface layer is about 31 inches of very pale brown fine sand mottled with gray. It is underlain by 9 inches of yellowish brown fine sand mottled with light gray. The subsoil is between depths of 48 and 99 inches. The upper 8 inches is yellowish brown sandy loam that has yellowish red and gray mottles and is about 3 percent plinthite, the next 16 inches is mottled gray sandy clay that is about 2 percent plinthite, and the lower 27 inches is mottled gray sandy clay loam that has lenses of sandy loam.

Available water capacity is low in the upper 48 inches, medium from 48 to 56 inches, high from 56 to 72 inches, and medium from 72 to 99 inches. Permeability is rapid in the upper 48 inches and moderate below. Natural fertility is low in the upper 48 inches of sandy material and medium in the sandy clay loam below. Organic-matter content is low.

Sparr soils are moderately well suited to general farm crops. They are well suited to the deep-rooting grasses grown in the area.

Representative profile of Sparr fine sand, 0 to 5 percent slopes, in an old field approximately 4.1 miles south of Ocala, one-fourth mile west of U.S Highway 441, NW¼SE¼ sec. 4, T. 16 S., R. 22 E.

Apl—0 to 5 inches; dark gray (10YR 4/1) fine sand; moderate medium and coarse granular structure; very friable; many fine and few medium roots; very strongly acid; clear wavy boundary.

Ap2—5 to 8 inches; mixed dark gray (10YR 4/1), grayish brown (10YR 5/2), and pale brown (10YR 6/3) fine sand; weak medium granular structure; very friable; many fine and few medium roots; strongly acid; clear wavy boundary.

A2—8 to 39 inches; very pale brown (10YR 7/4) fine sand; common fine distinct light gray mottles; few medium and large grayish brown (10YR 5/2) krotovinas; single grained; loose; common fine roots; strongly acid; clear wavy boundary.

A3—39 to 48 inches; yellowish brown (10YR 5/4) fine sand; few fine faint yellowish brown and common fine distinct light gray mottles; single grained; loose; few fine roots; strongly acid; clear wavy boundary.

B21t—48 to 56 inches; yellowish brown (10YR 5/4) sandy loam; few fine distinct gray and common medium prominent yellowish red (5YR 5/8) mottles; weak subangular blocky structure; friable; very few roots; few fine pores; about 3 percent plinthite; clay bridging between sand grains; strongly acid; clear wavy boundary.

B22tg—56 to 72 inches; gray (N 5/0) sandy clay; common fine and medium prominent yellowish red (5YR 5/6) mottles; moderate medium subangular blocky structure; friable; very few roots; few fine pores; clay films on faces of peds; about 2 percent plinthite; very strongly acid; clear wavy boundary.

B3g—72 to 99 inches; gray (N 5/0) sandy clay loam with lenses of sandy loam; common distinct strong brown (7.5YR 5/4) and few fine distinct pale brown mottles; weak medium subangular blocky structure; friable; very strongly acid.

The solum is more than 60 inches thick. Reaction is very strongly acid or strongly acid in all horizons. A few ironstone and leached phosphatic nodules less than three-quarters of an inch in diameter are in some pedons.

The A horizon is 40 to 80 inches thick. The texture is fine sand. The A1 or Ap horizon is dark gray (10YR 4/1), dark grayish brown (10YR 4/2), gray (10YR 5/1), or grayish brown (10YR 5/2). It is 4 to 8 inches thick. The A2 horizon is grayish brown (10YR 5/2), light brownish gray (10YR 6/2), very pale brown (10YR 7/3, 7/4), or pale brown (10YR 6/3) mottled with shades of gray, yellow, and brown. It is 30 to 60 inches thick. The A3 horizon is yellowish brown (10YR 5/4, 5/6, 5/8) or light yellowish brown (10YR 6/4). It is 6 to 12 inches thick. Gray mottles in the A3 horizon and the lower part of the A2 horizon indicate wetness.

The Bt horizon is 0 to 5 percent plinthite. The upper 20 inches of this horizon is, by weighted average, 15 to 35 percent clay.

The B21t horizon is very pale brown (10YR 7/3, 7/4), pale brown (10YR 6/3), yellowish brown (10YR 5/4, 5/6), or light yellowish brown (10YR 6/4) mottled with shades of gray, yellow, brown, and red. The gray mottles indicate wetness. The texture is sandy clay loam. Thickness is 4 to 10 inches.

The B22tg horizon is light gray (10YR 7/1) or gray (N 5/0, 6/0; 10YR 5/1, 6/1) and has common to many mottles in shades of red, brown, and yellow. The texture is sandy clay loam, light sandy clay, or sandy loam. Thickness is 12 to 20 inches.

The B23tg and B24tg horizons, if they occur, are sandy clay loam or light sandy clay 4 to 10 inches thick.

Some pedons have a 3- to 4-inch B1 horizon of loamy sand or sandy loam. The colors are similar to those of the B21t horizon.

The B3g horizon is light gray (10YR 7/1) or gray (10YR 5/1, 6/1) sandy clay loam or sandy loam 8 to 30 inches thick.

In some pedons a Cg horizon occurs at a depth of 72 inches or more. It is light gray (10YR 7/1) or gray (10YR 6/1, 5/1). The texture is sandy loam or sandy clay loam or is mixed sandy loam, sandy clay loam, and loamy sand.

Sparr soils are closely associated with Apopka, Arredondo, Blichton, Jumper, Kanapaha, Kendrick, and Lochloosa soils. They are more poorly drained than Apopka and Arredondo soils. They are better drained than Blichton soils and have a thicker A horizon. They have a thicker A horizon than Jumper soils and are better drained than Kanapaha soils. They are more poorly drained than Kendrick soils and have a thicker A horizon. Their A horizon is more than 40 inches thick, whereas that in Lochloosa soils is 20 to 40 inches thick.

**SpB—Sparr fine sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, somewhat poorly drained soil that occurs as small and large areas in the flatwoods and uplands. It has the profile described as representative of the series. The water table fluctuates between 30 and 60 inches for 1 month to 4 months during most years. For brief periods it is at a depth of about 20 to 30 inches. During dry periods it is at a depth of more than 60 inches.

Included with this soil in mapping are small areas, of a similar soil, where the content of plinthite is more than 5 percent within a depth of 60 inches. Also included are small areas of Arredondo, Jumper, Blichton, and Apopka soils and small areas of a similar soil that has a slope of 5 to 8 percent. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is live oak, water oak, post oak, sweetgum, slash pine, and longleaf pine and an understory of waxmyrtle and native grasses. Most areas are still in native vegetation. Many, however, are cleared and are used for cultivated crops and improved pasture. Capability unit IIIs-3; woodland group 3s1 .

**SpC—Sparr fine sand, 5 to 8 percent slopes.** This is a sloping, somewhat poorly drained soil that occurs as small areas on seepy hillsides in the uplands. The hazard of erosion is slight. Wet slopes are the result of hillside seepage. During most years the water table fluctuates between 30 and 60 inches for 1 month to 3 months. For brief periods of about 3 to 6 weeks, it is at a depth of 20 to 30 inches. During dry periods it is at a depth of more than 60 inches.

Included with this soil in mapping are small areas, of a similar soil, where the content of plinthite is more than 5 percent within a depth of 60 inches. Also included are small areas of Arredondo, Jumper, Blichton, and Apopka soils and small areas of a similar soil that has a slope of 0 to 5 percent. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is live oak, water oak, post oak, sweetgum, slash pine, and longleaf pine and an understory of chiefly waxmyrtle and native grasses. Most cleared areas are in improved pasture. Capability unit IVs-3; woodland group 3s1.

**SuB—Sparr-Urban land complex, 0 to 5 percent slopes.** This mapping unit is about 55 to 70 percent somewhat poorly drained Sparr sand and 30 to 45 percent Urban land. The percentage varies. Sparr sand is in open areas, such as parks, playgrounds, and vacant lots. Urban land is covered with sidewalks, streets, houses, driveways, industrial buildings, parking lots, and other structures.

About 20 to 30 percent of the open area has been modified by the cutting, grading, and spreading of soil material in preparing sites for buildings, streets, and septic tanks. The soil material excavated is spread over adjacent areas. In most places it is 1 inch to 12 inches thick. It is sandy.

Included in this unit in mapping are Lochloosa and Micanopy soils, both of which are similar to the Sparr sand. These included soils make up about 20 percent of some open areas. Also included are small areas of a similar soil that has a slope of 5 to 8 percent.

This mapping unit is well suited to lawn grasses and ornamental plants. Generally, the water table is at a depth of 20 to 30 inches for 3 to 6 weeks during wet seasons. It fluctuates between 30 and 60 inches for 1 month to 4 months. During dry periods it recedes to a depth of more than 60 inches. Not assigned to a capability unit or woodland group.

## Tavares Series

The Tavares series consists of nearly level to gently sloping, moderately well drained soils that formed in thick beds of sandy marine deposits. These soils occur in the broad sandy flatwoods and along lower slopes of the sandy uplands. The water table fluctuates between 40 and 60 inches for cumulative periods of 6 months or more during most years. During wet periods it may rise to within 30 to 40 inches of the surface for periods of less than 60 days. During droughty periods it recedes to a depth of more than 60 inches.

In a representative profile the surface layer is sand about 6 inches thick. The upper 3 inches is dark gray, and the lower 3 inches is gray. The underlying material to a depth of 85 inches is sand. It is pale brown between depths of 6 and 33 inches, pale brown mottled with yellowish red between 33 and 42 inches, very pale brown mottled with yellowish red and light gray between 42 and 53 inches, light gray mottled with very pale brown and yellowish red between 53 and 63 inches. white mottled with yellowish brown between 63 and 67 inches, and white mottled with gray between 67 and 85 inches.

Available water capacity is very low throughout. Permeability is very rapid throughout. Natural fertility and organic-matter content are low.

Tavares soils are moderately well suited to general farm crops. They are well suited to improved pasture of the deep-rooting grasses grown in the area.

Representative profile of Tavares sand, in an undisturbed area where the plant cover is slash pine, live oak, turkey oak, and wiregrass; 1.6 miles south of

State Road 316 at Eureka and 200 feet west of Daisy Road, NE¼NE¼ sec. 20, T. 13 S., R. 24 E.

A11—0 to 3 inches; dark gray (10YR 4/1) sand; weak medium granular structure; very friable; many fine and few medium roots; common uncoated sand grains; strongly acid; abrupt wavy boundary.

A12—3 to 6 inches; gray (10YR 5/1) sand; weak fine granular structure; loose; many fine and few medium roots; common uncoated sand grains; strongly acid; clear wavy boundary.

C1—6 to 33 inches; pale brown (10YR 6/3) sand; few fine and medium distinct light gray (10YR 7/1) stripped sand grains; few coarse krotovinas of gray (10YR 5/1); loose, single grained; common fine and few medium roots; many uncoated sand grains; strongly acid; clear wavy boundary.

C2—33 to 42 inches; pale brown (10YR 6/3) sand; few fine prominent yellowish red mottles; loose; single grained; few fine and medium roots; many uncoated sand grains; strongly acid; clear wavy boundary.

C3—42 to 53 inches; very pale brown (10YR 7/3, 7/4) sand; common fine and medium prominent yellowish red (5YR 5/8) and few medium distinct light gray (10YR 7/1) mottles; loose; single grained; few roots; many uncoated sand grains; strongly acid; clear wavy boundary.

C4—53 to 63 inches; light gray (10YR 7/1) sand; common coarse distinct very pale brown (10YR 7/3) and common fine prominent yellowish red mottles; single grained; loose; many uncoated sand grains; strongly acid; clear wavy boundary.

C5—63 to 67 inches; white (10YR 8/1) sand; few fine prominent yellowish brown mottles; single grained; loose; many uncoated sand grains; strongly acid; clear wavy boundary.

C6—67 to 85 inches; white (10YR 8/1) sand; common coarse faint gray (10YR 6/1) mottles; single grained; loose; many uncoated sand grains.

The texture is sand to a depth of more than 80 inches. Many of the sand grains are clean. The 10- to 40-inch control section is less than 5 percent silt and clay. Reaction is very strongly acid to strongly acid in all horizons.

The A horizon is very dark gray (10YR 3/1), dark gray (10YR 4/1), gray (10YR 5/1), or grayish brown (10YR 5/2). It is 4 to 8 inches thick. If very dark gray, it is less than 6 inches thick.

The upper 40 to 55 inches of the C horizon is light gray (10YR 7/1, 7/2), light grayish brown (10YR 6/2), grayish brown (10YR 5/2), very pale brown (10YR 7/3, 8/3, 7/4, 8/4), pale brown (10YR 6/3), yellow (10YR 7/6, 8/6), yellowish brown (10YR 5/4), and light yellowish brown (10YR 6/4). The low chromas are the colors of uncoated sand grains. The lower part of the C horizon is light brownish gray (10YR 6/2), gray (10YR 6/1), light gray (10YR 7/1) and white (10YR 8/1).

In many pedons few to common gray streaks of stripped sand grains and few mottles in shades of yellow, brown, and red occur within a depth of about 40 inches. The mottles do not indicate wetness. Few to common mottles in shades of gray, yellow, and brown occur below a depth of 40 inches. These mottles do indicate wetness.

Tavares soils are closely associated with Adamsville, Apopka, Astatula, Candler, and Pompano soils. They are better drained than Adamsville soils, which have a water table that is generally at a depth of 20 to 40 inches. They are more poorly drained than Apopka soils and also differ from those soils in not having a Bt horizon at a depth of 40 to 80 inches. They are better drained than Pompano soils, which have a water table that is commonly within a depth of 10 inches.

**TaB—Tavares sand, 0 to 5 percent slopes.** This is a nearly level to gently sloping, moderately well drained sandy soil that occurs as small and large areas in the broad sandy flatwoods and along the lower slopes of the deep sandy uplands. The water table fluctuates between 40 and 60 inches for cumulative periods of 6 months or more during most years. During wet periods it may rise to within 30 to 40 inches of the surface for periods of less than 60 days. It recedes to a depth of more than 60 inches during droughty periods.

Included with this soil in mapping are a few small areas, of a similar soil, where the slope is 5 to 8 percent. Also included are small areas of Adamsville, Candler, Apopka, and Pompano soils. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is chiefly slash pine, longleaf pine, turkey oak, post oak, bluejack oak, live oak, and water oak and native grasses. Most areas are still in native vegetation. Most cleared areas are in improved pasture. Capability unit IIIs-2; woodland group 3s1.

## Terra Ceia Series

The Terra Ceia series consists of nearly level, very poorly drained organic soils that formed largely in nonwoody, fibrous hydrophytic plant remains. These soils are in freshwater marshes and swamps. Under natural conditions, water is on the surface, except during extended dry periods. In areas where water is controlled, the level of the water table is regulated according to the needs of the crops.

In a representative profile the upper 61 inches is black muck. Below this to a depth of 68 inches is dark reddish brown mucky peat.

Available water capacity is very high. Permeability is rapid. Natural fertility is medium, and organic-matter content is very high.

Under natural conditions, Terra Ceia soils are not suited to cultivated crops or improved pasture. If water is controlled, however, they are well suited to commonly grown cultivated crops and to improved pasture.

Representative profile of Terra Ceia muck, in a marsh along the west bank of the Oklawaha River, approximately 0.6 mile north of State Road 42, SE¼NE¼ sec. 19, T. 17 S., R. 25 E.

Oa1—0 to 22 inches; black (N 2/0) well decomposed organic material (muck); less than 10 percent fibers unrubbed and rubbed; moderate medium granular structure; friable; few roots; sodium pyrophosphate extract color is yellowish brown (10YR 5/4); slightly acid; gradual wavy boundary.

Oa2—32 to 61 inches; black (10YR 2/1) well decomposed organic material (muck); 25 percent fibers, less than 10 percent rubbed; moderate medium granular structure; friable; few roots; sodium pyrophosphate extract color is light yellowish brown (10YR 6/4); neutral; gradual wavy boundary.

Oe—61 to 68 inches; dark reddish brown (5YR 2/2) partly decomposed organic material (mucky peat); 60 percent fibers, 25 percent rubbed; massive; sodium pyrophosphate extract color is white (10YR 8/1, 8/2); neutral.

Measured by the Hellige-Truog method, reaction ranges from medium acid to mildly alkaline. The thickness of the organic material ranges from 52 to more than 75 inches.

The Oa horizon ranges from black (N 2/0, 10YR 2/1), very dark gray (N 3/0, 5YR 3/1, 10YR 3/1), very dark brown (10YR 2/2), very dark grayish brown (10YR 3/2), and dark brown (7.5YR 3/2, 10YR 3/3) to dark reddish brown (5YR 2/2, 3/2, 3/3). The fiber content is less than

33 percent before rubbing and less than 10 percent after rubbing. Fibers are dominantly from nonwoody plants, but in some pedons the fiber content from woody plants is about 5 to 20 percent before rubbing. The sodium pyrophosphate extract is very pale brown (10YR 7/4), pale brown (10YR 6/3), brown (10YR 5/3), light yellowish brown (10YR 6/4), dark brown (10YR 4/3), and yellowish brown (10YR 5/4). The Oa horizon is more than 52 inches thick.

Some pedons have a dark reddish brown (5YR 2/2, 3/2, 3/3), black (N 2/0, 5YR 2/1, 10YR 2/1), dark brown (7.5YR 3/2, 10YR 3/3), very dark brown (10YR 2/2), or very dark grayish brown (10YR 3/2), less well decomposed Oe horizon below a depth of 52 inches. The fiber content ranges from 33 to 65 percent before rubbing and from 10 to 35 percent after rubbing. Fibers of nonwoody plants are dominant, but those of woody plants occur in some pedons. The sodium pyrophosphate extract is commonly light gray (10YR 7/2), white (10YR 8/1), or very pale brown (10YR 7/3).

The underlying mineral material is commonly sandy.

Terra Ceia soils are closely associated with Anclote, Bluff, Okeechobee, and Tomoka soils. They are of organic origin, whereas Anclote and Bluff soils are of mineral origin. They have organic horizons that, combined, are more than 52 inches thick, whereas Tomoka soils have an organic horizon that is 16 to 40 inches thick. They have sapric horizons to a depth of more than 52 inches, whereas Okeechobee soils have a hemic horizon within a depth of 52 inches.

**Tc—Terra Ceia muck.** This is a very poorly drained organic soil that occurs as small and large areas in the swamps and marshes adjacent to the Okalwaha River. Slopes are 0 to 2 percent. Under natural conditions, water is on the surface, except during extended dry periods. In areas where water is controlled, the level of the water table is regulated according to the needs of the crops.

Included with this soil in mapping are small areas of a very poorly drained, nonacid soil that has an organic layer less than 16 inches deep over sandy material. Also included are small areas of Anclote, Okeechobee, Tomoka, and Bluff soils. Included soils make up about 25 percent of any one mapped area.

The natural vegetation is either an aquatic plant cover of grasses, waterhyacinths, and sawgrass or a swamp hardwood growth of bay, maple, gum, cypress, and palm. Most areas are still in natural vegetation. Capability unit IIIw-8; not assigned to a woodland group.

## Terra Ceia Variant

The Terra Ceia variant consists of nearly level, very poorly drained organic soils that formed largely in nonwoody, fibrous hydrophytic plant remains mixed with aquatic woody material. These soils are in cypress ponds, large swamps, and marshes in the flatwoods. Under natural conditions, water is on the surface, except during extended dry periods. In areas where water is controlled, the level of the water table is regulated according to the needs of the crops.

In a representative profile the soil is muck to a depth of more than 65 inches. The upper 15 inches is black, and the lower 50 inches is dark reddish brown.

Available water capacity is very high. Permeability is rapid. Natural fertility is medium. Organic-matter content is very high.

Under natural conditions, these Terra Ceia soils are not suited to crops and improved pasture. If water is controlled, however, they are well suited to commonly grown crops and to improved pasture.

Representative profile of Terra Ceia muck, acid variant, in a large cypress swamp about 4 miles northwest of Fort McCoy and 3½ miles west of State Road 315, SW¼SW¼ sec. 32, T. 12 S., R. 23 E.

Oa1—0 to 15 inches; well decomposed organic material, black (N 2/0) unrubbed and rubbed; less than 10 percent fibers unrubbed and rubbed; moderate medium granular structure; friable; many fine roots; few medium and large partly decomposed limbs; sodium pyrophosphate extract color is yellowish brown (10YR 5/4); very strongly acid; diffuse wavy boundary.

Oa2—15 to 36 inches; dark reddish brown (5YR 3/2) well decomposed organic material, very dark gray (5YR 3/1) rubbed; less than 10 percent fibers unrubbed and rubbed; weak medium granular structure; friable; common fine roots; sodium pyrophosphate extract color is light yellowish brown (10YR 6/4); very strongly acid; gradual wavy boundary.

Oa3—36 to 65 inches; dark reddish brown (5YR 3/3) well decomposed organic material, (5YR 2/2) rubbed; less than 10 percent fibers unrubbed and rubbed; massive; few fine roots; sodium pyrophosphate extract color is pale brown (10YR 6/3); very strongly acid.

Measured by the Hellige-Truog method, reaction ranges from extremely acid to strongly acid in all horizons. The thickness of the organic material ranges from 52 to more than 80 inches. Fibers of both woody and nonwoody plants occur in most pedons, but those of nonwoody plants are most abundant.

The Oa horizon is more than 52 inches thick. The Oa1 horizon is black (N 2/0), very dark gray (N 3/0, 10YR 3/1), or very dark brown (10YR 2/2). It is 6 to 24 inches thick. The Oa2 and Oa3 horizons are very dark gray (N 3/0, 5YR 3/1, 10YR 3/1), very dark grayish brown (10YR 3/2), very dark brown (10YR 2/2), or dark reddish brown (5YR 3/2, 3/3).

The fiber content to a depth of more than 52 inches is less than 33 percent before rubbing and less than 10 percent after rubbing. The sodium pyrophosphate extract to a depth of at least 52 inches is very pale brown (10YR 7/4), light yellowish brown (10YR 6/4), brown (10YR 5/3), dark brown (10YR 4/3), and yellowish brown (10YR 5/4).

An Oe horizon of organic material that is not so well decomposed occurs below a depth of 52 inches in some pedons. The fiber content is more than 40 percent before rubbing and about 10 to 40 percent after rubbing.

The underlying mineral material is sand or loamy sand over sandy loam and sandy clay loam.

The Terra Ceia variant is associated with Okeechobee, Tomoka, and other Terra Ceia soils. It is more acid than other Terra Ceia soils. It has a thicker Oa horizon than Okeechobee soils and is more acid. It has organic horizons that, combined, are more than 52 inches thick, whereas Tomoka soils have an organic horizon that is 16 to 40 inches deep over a sandy mineral horizon.

**Te—Terra Ceia muck, acid variant.** This is a very poorly drained organic soil in large isolated cypress ponds, large swamps, and marshes in the flatwoods. Slopes are 0 to 2 percent. Under natural conditions, water is on the surface, except during extended dry periods. In areas where water is controlled, the level of the water table is regulated according to the needs of the crops.

Included with this soil in mapping are small areas of an acid, well decomposed muck that is less than 52 inches deep over mucky peat and small areas of an acid muck that is less than 16 inches deep over sand, sandy loam, or sandy clay loam. Also included are small areas of Tomoka and Okeechobee soils. Included soils make up about 12 percent of any one mapped area.

This soil is still in natural vegetation of either aquatic plants, including grasses, sedges, and waterhyacinths, and cypress and titi or a swamp hardwood growth of bay, maple, gum, and cypress. Capability unit IIIw–8; not assigned to a woodland group.

## Tomoka Series

The Tomoka series consists of nearly level, very poorly drained organic soils that formed in nonwoody, fibrous hydrophytic plant remains. These soils are in freshwater marshes and swamps. Under natural conditions, water is on the surface, except during extended dry periods. In areas where water is controlled, the level of the water table is regulated according to the needs of the crops.

In a representative profile the upper 32 inches is black muck that is less than 5 percent fibers. Between depths of 32 and 43 inches is gray sand. Below this to a depth of 60 inches is dark gray sandy clay loam.

Available water capacity is very high in the upper 32 inches, low from 32 to 43 inches, and medium below. Permeability is rapid in the upper 43 inches and moderate to moderately rapid below. Natural fertility is medium. Organic-matter content is very high in the organic layer and low in the underlying mineral layers.

Under natural conditions, Tomoka soils are not suited to cultivated crops and improved pasture. If water is controlled, however, they are well suited to certain cultivated crops and to improved pasture.

Representative profile of Tomoka muck, in a cultivated area of the Oklawaha Farm, just south of old river bed in southern part of the farm, 2 miles northwest of Moss Bluff, SE¼SW¼ sec. 16, T. 16 S., R. 24 E.

Oap—0 to 32 inches; well decomposed organic material (muck), black (N 2/0) unrubbed and rubbed; less than 5 percent fibers unrubbed and rubbed; moderate medium granular structure; friable; common fine roots; sodium pyrophosphate extract is dark yellowish brown (10YR 3/4); strongly acid; abrupt wavy boundary.

IIC1—32 to 43 inches; gray (10YR 6/1) sand; common medium faint streaks of dark gray (10YR 4/1); single grained; loose; few fine roots; strongly acid; clear wavy boundary.

IIC2—43 to 60 inches; dark gray (N 4/0) sandy clay loam; weak medium subangular blocky structure; firm, slightly sticky and plastic; slightly acid.

The Oa horizon is black (N 2/0, 10YR 2/1), very dark brown (10YR 2/2), very dark gray (N 3/0, 10YR 3/1), very dark grayish brown (10YR 3/2), or dark reddish brown (5YR 2/2, 3/2). The fiber content before rubbing is commonly less than 10 percent, but ranges to 33 percent. After rubbing, it is less than 10 percent. Fibers of herbaceous plants are dominant, but a few fibers of woody plants occur in some pedons. The sodium pyrophosphate extract is pale brown (10YR 6/3), light yellowish brown (10YR 6/4), yellowish brown (10YR 5/4), dark brown (10YR 4/3, 3/3), and dark yellowish brown (10YR 4/4, 3/4). The Oa horizon is 16 to 40 inches thick. Measured by the Hellige-Truog method, reaction ranges from strongly acid to slightly acid.

The IIC1 horizon is gray (10YR 5/1, 6/1), grayish brown (10YR 5/2), light grayish brown (10YR 6/2), or light gray (10YR 7/1, 7/2) sand, fine sand, or loamy sand. It is 6 to 24 inches thick. Reaction is strongly acid to medium acid.

The IIC2 horizon is very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0, 10YR 4/1), or gray (N 5/0, 10YR 5/1) sandy clay loam, sandy loam, or fine sandy loam. Reaction is medium acid to slightly acid.

Reaction in these soils is not within the range defined for the Tomoka series, but this difference does not alter use or management.

Tomoka soils are closely associated with Anclote, Bluff, Okeechobee, and Terra Ceia soils. They are of organic origin, whereas Anclote soils are of mineral origin. They are organic in the upper 16 to 40 inches and mineral below, whereas Anclote soils are sandy to a depth of 80 inches or more, Okeechobee soils are organic to a depth of more than 52 inches, and Terra Ceia soils are well decomposed organic material to a depth of more than 52 inches.

**To—Tomoka muck.** This is a very poorly drained organic soil that occurs as small and large areas in the marshes and swamps along the Oklawaha River. Slopes are 0 to 2 percent. Under natural conditions, the water table is at the surface, except during extended dry periods. In areas where water is controlled, the level of the water table is regulated according to the needs of the crops.

Included with this soil in mapping are small areas where the organic layer is less than 16 inches thick, a few small areas where 16 to 40 inches of muck overlies sandy clay or clay, and small areas where the upper 12 to 20 inches is muck and the next 10 to 24 inches is mucky peat that is underlain by sandy material. Also included are small areas of Anclote, Terra Ceia, Okeechobee, and Bluff soils. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is mostly aquatic grasses, sedges, waterhyacinths, and sawgrass. In some areas it is a swamp hardwood growth of white bay, red maple, gum, palm, and cypress. Many areas are cultivated. The rest is still in native vegetation. Capability unit IIIw–8; not assigned to a woodland group.

## Udalfic Arents

Udalfic Arents consist of well drained, heterogeneous, unconsolidated soil material excavated from mine pits and piled adjacent to the pits during mining and of similar soil material that has been shaped and is used mainly for crops and improved pasture.

A representative profile of Udalfic Arents, 0 to 5 percent slopes, to a depth of 14 inches is mixed material that is about 56 percent light yellowish brown and strong brown sandy clay loam, 34 percent light yellowish brown sandy clay, and 10 percent hard limestone fragments less than 3 inches in diameter. Below this, to a depth of 33 inches, is mixed material that is about 60 percent yellowish brown sandy loam and sandy clay loam, 33 percent sandy clay, and 7 percent hard limestone fragments less than 3 inches in diameter. Between depths of 33 and 65 inches is fine sand, which is the original soil material. The upper 6 inches is dark grayish brown, the next 4 inches is pale brown, and the lower 23 inches is light yellowish brown.

Available water capacity and permeability vary, but available water capacity is mostly low or medium and permeability mostly moderate to rapid in the unconsolidated material. Where the slope is 0 to 5 percent, permeability is rapid in the sandy material below the unconsolidated material. Natural fertility is low to medium. Organic-matter content is generally low.

Udalfic Arents that are piled adjacent to the mine pits are unsuitable for crops, improved pasture, and forestry. Udalfic Arents that have been shaped are used mostly for special crops and improved pasture.

Representative profile of Udalfic Arents, 0 to 5 percent slopes, 2 miles north of Ocala and 250 feet west of U.S. Highways 441 and 301, NE¼NE¼ sec. 36, T. 14 S., R. 21 E.

C1—0 to 14 inches; mixed soil material; about 56 percent of the matrix is light yellowish brown (10YR 6/4) and strong brown (7.5YR 5/6) sandy clay loam, and 34 percent of the mixed material is light yellowish brown (10YR 6/4) sandy clay; massive; friable and some firm; about 10 percent hard limestone fragments less than 3 inches in diameter; neutral; gradual irregular boundary.

C2—14 to 33 inches; mixed soil material; about 60 percent of the mixed material is yellowish brown (10YR 5/6) sandy loam and sandy clay loam, and 33 percent is sandy clay; few medium streaks and clumps of dark yellowish brown (10YR 3/4); massive; friable and some firm; about 7 percent hard limestone fragments less than 3 inches in diameter; neutral; clear irregular boundary.

Ab—33 to 38 inches; dark grayish brown (10YR 4/2) fine sand; single grained; loose; thin streaks of sandy loam; about 4 percent hard limestone fragments less than 3 inches in diameter; slightly acid; clear wavy boundary.

A21b—38 to 42 inches; pale brown (10YR 6/3) fine sand; single grained; loose; few fine faint light gray clean sand streaks; medium acid; clear wavy boundary.

A22b—42 to 65 inches; light yellowish brown (10YR 6/4) fine sand; few fine faint pale brown mottles; single grained; loose; strongly acid.

Udalfic Arents are associated with Arredondo, Candler, Fellowship, Hague, Kendrick, and Zuber soils. They are mixed and have no definite horizons, whereas those soils have a sandy A horizon and a loamy or clayey Bt horizon.

Reaction is strongly acid to neutral. The unconsolidated soil material is mainly very pale brown (10YR 7/4), pale brown (10YR 6/3), light yellowish brown (10YR 6/4), yellowish brown (10YR 5/4, 5/6), dark brown (10YR 3/3, 4/3), brown (10 YR 5/3), dark yellowish brown (10YR 3/4, 4/4), and strong brown (7.5YR 5/6, 5/8). In some areas it has a few thin streaks of gray (N 5/0, 6/0; 10YR 5/1, 6/1).

The matrix is a mixture of sandy loam, sandy clay loam, and sandy clay or a mixture of sandy, loamy, and clayey soil material. The loamy material is dominant in most areas, ranging from about 40 to 60 percent of the matrix. The unconsolidated material is 2 to 5 feet thick. The sandy loam, sandy clay loam, and sandy clay appear to be fragments of argillic horizons. These fragments are scattered throughout the soil and are mixed with material from other horizons.

Thin, discontinuous clay films are in the fragments of argillic horizons that are sandy clay. Clay bridging between sand grains is evident in the fragments of argillic horizons that are sandy loam or sandy clay loam. The content of rock fragments less than 3 inches in diameter is, by volume, about 5 to 15 percent. The content of rock fragments more than 3 inches in diameter is 0 to 5 percent. The rock fragments are hard carbonatic material or weathered, leached limestone.

The original soil material below the unconsolidated material varies, ranging from several feet of sand to loamy sand over loamy and clayey soil.

**UaA—Udalfic Arents, 0 to 5 percent slopes.** This mapping unit is mixed material that has been smoothed and shaped. This material was piled adjacent to surface mines during mining. It was later spread over the surface of adjacent soils and then shaped or leveled. It is commonly about 24 to 48 inches thick, but in places is more than 60 inches thick. In a few areas it is about 1 to 5 percent hard limestone fragments. The soils buried under this material have retained their original properties. In about 55 percent of the delineated areas, they can be identified. These areas are about 60 percent Fellowship, Hague, Kendrick, and Zuber soils and 40 percent Arredondo and Candler soils. The water table is below a depth of 72 inches.

Included in this unit in mapping are a few areas of fill material that is mostly sandy soil and small areas where only about 12 to 24 inches of mixed material overlies uniform soil material. Also included are a few small areas where organic and inorganic refuse has been placed in old mines. This refuse has been mixed with fill material and is also used as cover material. In a few spots the water table is within 20 to 72 inches of the surface. Included areas make up about 15 percent of the unit.

This mapping unit is used mostly for special truck crops or improved pasture. Capability unit VIs-4; not assigned to a woodland group.

A representative profile of Udalfic Arents, 15 to 60 percent slopes, to a depth of 90 inches is mixed material that is about 55 percent dark brown and yellowish brown sandy loam and sandy clay loam, 28 percent dark yellowish brown sandy clay having thin streaks of strong brown, 15 percent hard limestone fragments less than 3 inches in diameter, and 2 percent hard limestone fragments more than 3 inches in diameter. Between depths of 90 and 180 inches is yellowish brown, light yellowish brown, and dark yellowish brown sandy, loamy, and clayey soil material that is about 25 percent hard limestone fragments less than 3 inches in diameter and about 2 percent hard limestone fragments more than 3 inches in diameter.

Representative profile of Udalfic Arents, 15 to 60 percent slopes, one-half mile south of Lowell and one-half mile east of State Road 25A, T. 13 S., R. 21 E. (John Broward Grant):

C1—0 to 90 inches; mixed soil material; about 55 percent of the matrix is dark brown (10YR 4/3) and yellowish brown (10YR 5/4) sandy loam and sandy clay loam, and 28 percent of the mixed material is dark yellowish brown (10YR 4/4) sandy clay with thin streaks of strong brown (7.5YR 5/6); massive; friable and some firm; about 15 percent hard limestone fragments less than 3 inches in diameter, 2 percent more than 3 inches in diameter; slightly acid; gradual irregular boundary.

C2—90 to 180 inches; mixed soil material; yellowish brown (10YR 5/4) and light yellowish brown (10YR 6/4) sandy, loamy, and clayey material; massive; friable; about 25 percent hard limestone fragments less than 3 inches in diameter, 2 percent more than 3 inches in diameter; slightly acid.

The unconsolidated material is 7 to 20 feet thick. The content of rock fragments less than 3 inches in diameter is, by volume, about 10 to 35 percent.

**UaF—Udalfic Arents, 15 to 60 percent slopes.** This mapping unit is well drained mixed soil material and unconsolidated material that has been excavated from and piled adjacent to mine pits. These materials remain in the position in which they were deposited. Areas are generally small. The water table is at a depth of more than 72 inches.

Included in this unit in mapping are a few small areas of Udalfic Arents, 0 to 5 percent slopes. In a few areas the mixed soil material is dominantly pale brownish sandy material. Included soils make up less than 12 percent of any one mapped area.

Weeds, shrubs, and grasses have become established in some areas. In some of the older areas, some trees have reseeded naturally. Many areas are bare or have sparse vegetation. Capability unit VIIIs–1; not assigned to a woodland group.

## Urban Land

**Ur—Urban land** is more than 70 percent covered with shopping centers, parking lots, large buildings, streets, sidewalks, and other structures. Observation of the soil is impossible. Arredondo, Candler, Hague, Kendrick, Sparr, and Blichton soils are in open areas, such as parks, vacant lots, and playgrounds. They have been altered by cutting, ditching, and shaping, and the surface is covered with 5 to 12 inches of sandy fill material. The open areas are too small to be mapped separately. Included in mapping are small areas where only 60 to 70 percent of the surface is covered with urban structures. Included areas make up about 20 percent of this unit. Not assigned to a capability unit or woodland group.

## Wacahoota Series

The Wacahoota series consists of sloping, poorly drained soils that formed in thick beds of sandy and loamy marine deposits. These soils occur as small and large areas on wet slopes in the uplands. They are saturated with a water table that, as a result of hillside seepage, is within 10 inches of the surface for 1 month to 4 months during most years.

In a representative profile the surface layer is dark gray loamy sand about 5 inches thick. The subsurface layer is gray loamy sand about 24 inches thick. It is, by volume, about 18 percent weathered phosphatic limestone gravel. The subsoil to a depth of 78 inches is mottled gray sandy clay loam. The upper 32 inches is, by volume, about 14 percent rock fragments less than 3 inches in diameter, and the lower 17 inches is 10 percent.

Available water capacity is low in the upper 29 inches and low to medium below. Permeability is rapid in the upper 29 inches of sandy soil and moderate below. Natural fertility and organic-matter content are low.

Wacahoota soils are only moderately well suited to the crops commonly grown in the area. They are well suited to improved pasture of locally grown grasses and legumes.

Representative profile of Wacahoota loamy sand, 5 to 8 percent slopes, in a bahiagrass pasture three-quarters of a mile west of Interstate Highway 75 and 300 feet south of State Road 320, NW¼NW¼ sec. 14, T. 12 S., R. 20 E.

Ap—0 to 5 inches; dark gray (10YR 4/1) loamy sand; moderate medium granular structure; very friable; common fine roots; about 2 percent gravel; strongly acid; clear wavy boundary.

A2—5 to 29 inches; gray (10YR 6/1) loamy sand; weak fine granular structure; friable; few fine roots; about 18 percent weathered phosphatic limestone gravel; strongly acid; clear wavy boundary.

B21tg—29 to 38 inches; gray (N 5/0) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; thin discontinuous clay films on faces of peds; about 23 percent gravel; very strongly acid; gradual wavy boundary.

B22tg—38 to 61 inches; gray (N 5/0) sandy clay loam; few fine distinct light gray and very pale brown mottles; moderate medium subangular blocky structure; firm; few roots; thin discontinuous clay films on faces of peds; about 14 percent gravel; very strongly acid; gradual wavy boundary.

B3g—61 to 78 inches; gray (10YR 6/1) sandy clay loam; few fine distinct brownish yellow and greenish gray mottles; weak fine subangular blocky structure; firm; about 11 percent gravel; very strongly acid.

The solum is 60 inches or more thick. Except in a limed Ap horizon, reaction ranges from very strongly acid to medium acid. The solum is, by volume, 5 to 25 percent gravel or weathered rock fragments less than 3 inches in diameter and 0 to 5 percent ironstone nodules less than three-quarters of an inch in diameter.

The A horizon is loamy sand. The A1 or Ap horizon is very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0, 10YR 4/1), or gray (N 5/0, 10YR 5/1). It is 4 to 6 inches thick. If very dark gray, it is less than 6 inches thick. The A2 horizon is gray (10YR 5/1, 6/1), grayish brown (10YR 6/2), or light gray (10YR 7/1, 7/2). It is 20 to 32 inches thick.

The B2tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) or dark gray (N 4/0, 10YR 4/1) and in most pedons is mottled with shades of yellow, brown, and red. It is commonly sandy clay loam, but in some pedons it is sandy clay and the clay content is about 37 percent. This horizon is 0 to 5 percent plinthite.

Some pedons have a 3- to 5-inch B1g horizon of sandy loam that has the same color range as the B2tg horizon.

The B3g horizon is gray (N 5/0, 6/0, 10YR 5/1, 6/1) or light gray (10YR 7/1) mottled with shades of yellow, brown, and red. It is sandy clay loam that in a few pedons has a few lenses of sandy loam. It is 10 inches or more thick.

The Cg horizon, if it occurs, is gray (10YR 5/1, 6/1) or light gray (10YR 7/1) sandy clay loam.

Wacahoota soils are closely associated with Blichton, Boardman, Fellowship, and Flemington soils. Their solum is 5 to 25 percent, by volume, rock fragments or gravel whereas that of Blichton soils is less than 5 percent. Their A horizon is 20 to 40 inches thick, whereas that of Boardman soils is less than 20 inches thick. They contain more rock fragments or gravel than Fellowship soils and have a thicker, lighter colored A horizon and a coarser textured Btg horizon. They contain more rock fragments or gravel throughout the solum than Flemington soils and have a thicker A horizon and a coarser textured Btg horizon.

**WaC—Wacahoota loamy sand, 5 to 8 percent slopes.** This is a sloping, poorly drained soil that occurs as small, sharp-breaking areas or large areas on long slopes in the uplands. It is saturated with a water table that, as a result of hillside seepage, is within 10 inches of the surface for 1 month to 4 months during most years. Surface runoff is medium.

Included with this soil in mapping are a few spots of Blichton, Boardman, Fellowship, and Flemington soils and a few small areas where the soil is 25 to more than 35 percent gravel or rock fragments less than 3 inches in diameter. Also included are spots of a soil similar to Wacahoota loamy sand and some areas of a Blichton soil, both of which have slopes of 2 to 5 or 8 to 12 percent. The rock outcrop and sinkholes that occur in some areas are identified by spot symbols on the soil map. Included soils make up less than 20 percent of any one mapped area.

The natural vegetation is slash pine, loblolly pine, longleaf pine, water oak, laurel oak, dogwood, sweetgum, and hickory and an understory of waxmyrtle and native grasses. Most areas are still in forest. Most cleared areas are in improved pasture. Capability unit IVw-1; woodland group 2w1.

## Wacahoota Variant

The Wacahoota variant consists of gently sloping to sloping, poorly drained soils that formed in thick beds of loamy deposits influenced by phosphatic material. These soils occur as small areas in the uplands. At least the upper 20 inches of the subsoil is, by volume, more than 35 percent hard iron concretions, phosphatic pebbles, gravel or siliceous rock fragments, and leached phosphatic rock fragments less than 3 inches in diameter. The water table is within 10 inches of the surface for periods of 1 month to 4 months during most years. During day periods it recedes to a depth of more than 40 inches.

In a representative profile the surface layer is gray gravelly sand about 5 inches thick. The subsurface layer is light gray gravelly sand about 26 inches thick. The subsoil extends to a depth of 72 inches. The upper 5 inches is gray gravelly sandy loam, the next 27 inches is mottled gray gravelly sandy clay loam, and the lower 9 inches is mottled gray gravelly sandy clay loam. The underlying material to a depth of 78 inches is mottled gray sandy clay loam or light sandy clay that is less than 5 percent gravel or leached phosphatic rock fragments less than 3 inches in diameter.

Available water capacity is very low in the upper 31 inches, low to very low from 31 to 72 inches, and medium below. Natural fertility is low in the upper 31 inches and medium below. Permeability is rapid in the upper 31 inches, moderately rapid from 31 to 36 inches, moderate from 36 to 72 inches, and moderately slow below. Organic-matter content is generally low.

These Wacahoota soils are poorly suited to most general farm crops. They are moderately well suited to improved pasture and the special crops grown in the area.

Representative profile of Wacahoota gravelly sand, gravelly subsoil variant, 2 to 5 percent slopes, approximately 0.2 mile east of U.S. Highway 27 and 3.6 miles northwest of Blichton, SW¼NW¼ sec. 25, T. 13 S., R. 19 E.

A1—0 to 5 inches; gray (10YR 5/1) gravelly sand; weak medium granular structure; very friable; many fine roots; about 25 percent hard pebbles and gravel or rock fragments less than 3 inches in diameter; some boulders on the surface; very strongly acid; abrupt smooth boundary.

A2—5 to 31 inches; light gray (10YR 7/2) gravelly sand; common medium faint light gray (10YR 7/1) and common medium faint gray (10YR 6/1) mottles; single grained; loose; few fine roots; about 35 to 40 percent hard pebbles and gravel or rock fragments less than 3 inches in diameter; very strongly acid; clear wavy boundary.

B21tg—31 to 36 inches; gray (N 5/0) gravelly sandy loam; weak fine subangular blocky structure; friable; few fine roots; about 45 percent hard pebbles and gravel or leached rock fragments less than 3 inches in diameter, a few more than 3 inches in diameter; 2 percent yellowish red (5YR 4/6) plinthic nodules; very strongly acid; clear wavy boundary.

B22tg—36 to 63 inches; gray (N 5/0) gravelly sandy clay loam; few fine distinct yellowish brown mottles; moderate medium subangular blocky structure; firm; few fine roots; few thin discontinuous clay films on ped faces; about 50 percent hard pebbles and gravel or rock fragments less than 3 inches in diameter, a few more than 3 inches in diameter; about 2 percent yellowish red (5YR 4/6) soft plinthic nodules; very strongly acid; clear wavy boundary.

B3g—63 to 72 inches; gray (N 5/0) gravelly sandy clay loam; common fine and medium distinct light yellowish brown (10YR 6/4) mottles; weak medium subangular blocky structure; firm; few thin clay films on ped faces; about 35 percent gravel or leached phosphatic rock fragments less than 3 inches in diameter; 2 percent yellowish red (5YR 4/6) soft plinthic nodules; very strongly acid; clear wavy boundary.

Cg—72 to 78 inches; gray (N 6/0) sandy clay loam or light sandy clay; few medium faint light gray (5Y 7/1), few fine prominent yellowish red, and common fine distinct yellow mottles; massive; firm; few fine slightly firm strong brown concretions; about 5 percent gravel or leached phosphatic rock fragments less than 3 inches in diameter; very strongly acid.

The solum is 60 inches or more thick. The A and Bg horizons are 0 to 10 percent rock fragments more than 3 inches in diameter. In some pedons they are more than 35 percent rock fragments.

The A horizon is gravelly sand. Reaction ranges from very strongly acid to medium acid. The A1 or Ap horizon is very dark gray (N 3/0, 10YR 3/1), dark gray (N 4/0, 10YR 4/1), or gray (N 5/0, 10YR 5/1). It is 15 to 25 percent gravel or rock fragments less than 3 inches in diameter. Thickness is 4 to 6 inches. The A2 horizon is gray (10YR 6/1), light brownish gray (10YR 6/2), or light gray (10 YR 7/1, 7/2). It is 22 to 32 inches thick.

The Btg horizon is very strongly acid to strongly acid. The content of plinthite ranges from 0 to 5 percent. The B21tg horizon is dark gray (10YR 4/1), or gray (N 5/0, 6/0; 10YR 5/1, 6/1) gravelly sandy loam 4 to 6 inches thick. The B22tg horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) gravelly sandy loam or gravelly sandy clay loam mottled with shades of yellow, brown, and red. It is 23 to 29 inches thick.

The B3g horizon is gray (N 5/0, 6/0; 10YR 5/1, 6/1) gravelly sandy loam or gravelly sandy clay loam that in places is mottled with shades of yellow, brown, and red. It is 8 inches or more thick. Reaction is very strongly acid or strongly acid.

The Cg horizon is gray (10YR 5/1, 6/1) sandy clay loam or light sandy clay. In some pedons it has lenses of coarser textured material. Reaction is very strongly acid or strongly acid.

The Wacahoota variant is very closely associated with other Wacahoota soils. It is also associated with Fellowship, Flemington, and Kanapaha soils. It is, by volume, more than 35 percent hard pebbles and gravel in at least the upper 20 inches of the Btg horizon, whereas the associated soils are less than 35 percent pebbles and gravel. It has a thicker A horizon and a coarser textured Btg horizon than Flemington and Fellowship soils and a thinner A horizon than Kanapaha soils.

**WgB—Wacahoota gravelly sand, gravelly subsoil variant, 2 to 5 percent slopes.** This is a gently sloping, poorly drained soil that occurs as small areas in the uplands. It has the profile described as representative of the variant. The water table is within 10 inches of the surface for 1 month to 4 months during most years. During dry periods it recedes to a depth of more than 40 inches. Surface runoff is medium.

Included with this soil in mapping are small areas, of a similar soil, where the subsoil is more than 5 percent plinthite or at least the upper 20 inches of the subsoil is less than 35 percent pebbles and gravel. Also included are small areas of Fellowship and Kanapaha soils and small areas of a similar soil that has a slope of 5 to 8 percent. Sinkholes and rock outcrop, both of which occur in many areas, are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is slash pine, longleaf pine, loblolly pine, sweetgum, dogwood, hickory, oak, and waxmyrtle and native grasses. Most areas are still in forest. Most cleared areas are used for improved pasture. Capability unit IVw-4; woodland group 2wl.

**WgC—Wacahoota gravelly sand, gravelly subsoil variant, 5 to 8 percent slopes.** This is a sloping, poorly drained soil that occurs as small areas on wet hillsides of the uplands. Surface runoff is medium, and the hazard of erosion is moderate. Wetness is caused by hillside seepage and slow internal drainage. The water table is within about 10 inches of the surface for periods of 1 month to 4 months during most years. It recedes to a depth of more than 40 inches during dry periods.

Included with this soil in mapping are a few areas of a similiar soil that is, by volume, more than 5 percent plinthite. Also included are small areas of Fellowship, Flemington, and Kanapaha soils and small areas, of a similar soil, where the slope is 8 to 12 or 2 to 5 percent. The sinkholes and rock outcrop that occur in many areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

Most areas are still in a natural vegetation of slash pine, longleaf pine, loblolly pine, sweetgum, dogwood, and hickory and an understory of shrubs and grasses. Capability unit VIw-1; woodland group 2wl.

## Zuber Series

The Zuber series consists of nearly level to sloping, well drained soils that formed in thick beds of clayey marine deposits influenced by phosphatic material. These soils occur as small areas in the upland. The water table is at a depth of more than 72 inches.

In a representative profile the surface layer is dark grayish brown loamy sand about 7 inches thick. Below this is yellowish brown loamy sand about 8 inches thick. The subsoil extends to a depth of 77 inches. It is, in sequence downward, 5 inches of dark yellowish brown sandy clay loam, 34 inches of dark yellowish brown sandy clay, 16 inches of yellowish brown sandy clay mottled with light gray and strong brown, and 7 inches of yellowish brown clay mottled with gray and yellowish red. The underlying material to a depth of 82 inches is light gray clay mottled with light yellowish brown, strong brown, and white.

Available water capacity is low in the upper 15 inches and medium to high below. Permeability is rapid in the upper 15 inches, moderate from 15 to 20 inches, and moderately slow below. Natural fertility is low in the upper 15 inches and medium below. Organic-matter content is low.

Zuber soils are well suited to most general farm crops and improved pasture of deep-rooting grasses and commonly grown legumes.

Representative profile of Zuber loamy sand, 2 to 5 percent slopes, in an improved pasture about one-half mile west of State Road 475A, 2.5 miles south of State Road 200, NE¼ sec. 2, T. 16 S., R. 21 E.

Ap—0 to 7 inches; dark grayish brown (10YR 4/2) loamy sand; moderate medium granular structure; friable; common fine and medium roots; medium acid; clear smooth boundary.

A3—7 to 15 inches; yellowish brown (10YR 5/4) loamy sand; moderate medium granular structure; friable; few fine roots; medium acid; clear wavy boundary.

B21t—15 to 20 inches; dark yellowish brown (10YR 4/4) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few distinct discontinuous clay films on faces of peds and in pores; strong clay bridging between sand grains; few fine weathered phosphatic pebbles and ironstone nodules; medium acid; clear wavy boundary.

B22t—20 to 54 inches; dark yellowish brown (10YR 4/4) sandy clay; moderate medium subangular blocky structure; firm; few fine and medium roots; common distinct clay films on ped faces; few fine weathered phosphatic pebbles and ironstone nodules; medium acid; clear wavy boundary.

B23t—54 to 70 inches; yellowish brown (10YR 5/6) sandy clay; few fine distinct light gray and strong brown mottles; weak moderate subangular blocky structure; firm; discontinuous clay films on ped faces; few thin flat fragments of limestone; few fine weathered phosphatic pebbles and ironstone nodules; medium acid; clear wavy boundary.

B3—70 to 77 inches; yellowish brown (10YR 5/8) clay; common fine and medium distinct gray (10YR 6/1) and few medium distinct yellowish red (5YR 5/8) mottles; weak moderate subangular blocky structure; very firm; few faint clay films on ped faces and in pores; few thin flat fragments of limestone; few fine weathered phosphatic pebbles and ironstone nodules; medium acid; clear wavy boundary.

C—77 to 82 inches; light gray (5Y 7/1) clay; common fine distinct light yellowish brown, strong brown, and white mottles; massive; very firm; medium acid.

The solum is 60 inches or more thick. Most pedons have weathered phosphatic pebbles and ironstone nodules that are less than three-quarters of an inch in size and are less than 5 percent of the volume. In some pedons the solum is, by volume, less than 5 percent partly weathered fragments of phosphatic limestone rocks 2 to 3 inches in diameter.

The lower part of the B2t horizon is 0 to 5 percent plinthite.

The A horizon is strongly acid to medium acid. The Ap or A1 horizon is dark gray (10YR 4/1), dark grayish brown (10YR 4/2), or grayish brown (10YR 5/2). Thickness is 5 to 8 inches. The A3 horizon is pale brown (10YR 6/3), light yellowish brown (10YR 5/4, 5/6), or dark yellowish brown (10YR 4/4) loamy sand or loamy fine sand 6 to 10 inches thick.

A B1 horizon is in some pedons. It is light yellowish brown (10YR 6/4), yellowish brown (10YR 5/4, 5/6), or dark yellowish brown (10YR 4/4) sandy loam 2 to 5 inches thick.

The B2t horizon is brownish yellow (10YR 6/6), yellowish brown (10YR 5/4, 5/6, 5/8), dark yellowish brown (10YR 4/4), and strong brown (7.5YR 5/6, 5/8). In some pedons the B21t and B22t horizons have few mottles of yellow, brown, and red. The B23t horizon has few to common mottles of gray, yellow, brown, and red. In a few pedons the matrix of the B23t horizon and the B24t horizon is gray. The B21t horizon is sandy clay loam or sandy clay, and the B22t and B23t horizons are sandy clay or clay. The B21t horizon is strongly acid to medium acid, and the B22t and B23t horizons range from strongly acid to slightly acid. The B21t horizon is 4 to 8 inches thick, the B22t horizon is 24 to 46 inches thick, and the B23t horizon is 16 to 20 inches thick.

The B3 horizon is gray (10YR 5/1, 6/1), light yellowish brown (10YR 6/4), and yellowish brown (10YR 5/4, 5/6) mottled with shades of gray, yellow, brown, and red. Texture is generally sandy clay or clay, but ranges to heavy sandy clay loam. Reaction ranges from strongly acid to slightly acid. Thickness is 6 to 10 inches.

The C horizon is mottled gray (10YR 5/1, 6/1) or light gray (10YR 7/1, 7/2). The texture is sandy clay or sandy clay loam that in some pedons has fine lenses of coarser textured material.

Zuber soils are closely associated with Fellowship, Flemington, Gainesville, Hague, Kendrick, and Micanopy soils. They are better drained than Fellowship, Flemington, and Micanopy soils. They are of mixed mineralogy, whereas Fellowship and Flemington soils are of montmorillonitic mineralogy. They have less than 20 inches of loamy sand over a sandy clay Bt horizon, whereas Gainesville soils are loamy sand to a depth of more than 80 inches. They have a thinner A horizon and a finer textured Bt horizon than Hague and Kendrick soils.

**ZuA—Zuber loamy sand, 0 to 2 percent slopes.** This is a nearly level, well drained soil that occurs as small areas in the upland. The water table is at a depth of more than 72 inches. Surface runoff is slow, and the hazard of erosion is slight.

Included with this soil in mapping are small areas, of a similar soil, where the subsoil is dominantly sandy clay loam and areas where the upper 60 inches is more than 5 percent plinthite. Also included are small areas of Micanopy, Lochloosa, Kendrick, Hague, and Flemington soils and a few small areas of a similar soil that has a slope of 2 to 5 percent. Included soils make up about 15 percent of any one mapped area.

The natural vegetation is a forest of slash pine, loblolly pine, laurel oak, live oak, water oak, white oak, sweetgum, dogwood, hickory, and magnolia and an understory of chiefly native grasses. Most areas have been cleared for crops and pasture. Capability unit I-1; woodland group 2o1.

**ZuB—Zuber loamy sand, 2 to 5 percent slopes.** This is a gently sloping, well drained soil that occurs as small areas in the upland. It has the profile described as representative of the series. The water table is at a depth of more than 72 inches. Surface runoff is medium, and the erosion hazard is moderate.

Included with this soil in mapping are small areas of a similar soil that is eroded; small areas, of a similar soil, where the surface layer and subsoil are, by volume, more than 35 percent gravel or weathered rock fragments less than 3 inches in diameter; spots, also of a similar soil, where the subsoil is sandy clay loam throughout or the lower part of the subsoil is more than 5 percent plinthite; and small areas of Micanopy, Lochloosa, Kendrick, Flemington, and Hague soils. Also included are spots of a similar soil that has a slope of 0 to 2 or 5 to 8 percent. The rock outcrop and sinkholes that are in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is slash pine, loblolly pine, and a growth of hardwoods, including oak, sweetgum, hickory, dogwood, and magnolia. Most areas are cleared and are used for cultivated crops or improved pasture. Capability unit IIe-1; woodland group 2o1.

**ZuC—Zuber loamy sand, 5 to 8 percent slopes.** This is a sloping, well drained soil that occurs as small areas of the upland. It has a profile similar to that described as representative of the series, but it is shallower over the underlying material and the surface layer is 1 inch to 2 inches thinner. Surface runoff is rapid, and the hazard of erosion is severe.

Included with this soil in mapping are small areas, of a similar soil, where the lower part of the subsoil is more than 5 percent plinthite and small areas of a well drained soil having a sandy clay loam subsoil within a depth of 20 inches. The clay content in this included well drained soil decreases more than 20 percent from the depth of the maximum content to a depth within 60 inches. Also included are a few small areas where the surface layer and the subsoil, combined, are less than 60 inches thick; spots of Micanopy, Lochloosa, Kendrick, and Flemington soils; and a few small areas of a similar soil that is, by volume, more than 35 percent gravel or rock fragments less than 3 inches in diameter. The rock outcrop and sinkholes that are in some areas are identified by spot symbols on the soil map. Included soils make up about 20 percent of any one mapped area.

The natural vegetation is chiefly slash pine, loblolly pine, oak, dogwood, sweetgum, and hickory. Most areas are cleared and are in improved pasture. Capability unit IIIe-2; woodland group 2o1.

## *Use and Management of the Soils*

This section defines the use and management of the soils in the Marion County Area for crops, pasture, and citrus; woodland; wildlife; engineering; recreational facilities; and building sites and sanitary facilities. It also explains the capability classification system and lists the estimated yields of the main crops.

### Crops, Pasture, and Citrus

The pages that follow explain the capability classification system used by the Soil Conservation Service, in which the soils are grouped according to their suitability for most kinds of farming. They define the capability grouping and suggest the management of the soils by capability units. They also list estimated yields of the major crops grown under a high level of management.

Although water is the major limitation on the largest acreage in this survey area, soils that are severely limited by poor soil qualities are of almost equal extent. Soils on which the most severe hazard is erosion are of lesser extent.

In many soils the root zone of plants is affected by a high water table during wet periods. It is also affected by droughtiness during dry periods because the soil cannot retain sufficient water when the water table recedes to a depth below the root zone. In these soils a combined system of drainage and subsurface irrigation removes excess water during wet periods and supplies water during dry periods. Some soils that have a high water table have slopes of 5 to 12 percent. Although wetness is the dominant limiting factor in these soils, the hazard of erosion is severe in areas where the surface is not protected by a good plant cover. It is severe because surface runoff is rapid during rainfall.

In the soils where the major limitation is poor soil qualities, the root zone is mostly sandy and the available water capacity and the capacity to hold plant nutrients are low to very low. Natural fertility in the root zone is also generally low. These properties can be improved if a soil-improving cover crop, such as hairy indigo, is grown between crops and if all plant residue is returned to the soil. The response to fertilization varies. Soil blowing occurs unless the soils are protected by an adequate plant cover or by windbreaks.

Most soils in areas where erosion is the major limitation are cleared and are used for cultivated crops or improved pasture. Crop rotation and soil-improving cover crops are needed to maintain fertility and minimize erosion during rainfall. Improved pasture should be established and interplanted with a fast-growing annual to provide maximum protection.

About 140,000 acres in the uplands in the central and western parts of the survey area is improved pasture. This acreage is poorly drained to well drained. Improved bermudagrass and bahiagrass are the most widely grown pasture plants. Pangolagrass and white clover are grown less extensively. Most of the acreage in the flatwoods is still in natural vegetation, but is well suited to clover-grass pasture. A good system of drainage and subsurface irrigation is needed to remove excess water during wet periods and supply water in the root zone during droughty periods. Under good management and adequate water control, much of this acreage is also suited to a wide variety of vegetable crops.

About 14,000 acres, in three widely separated areas, is in citrus. The largest area is around Weirsdale, where the groves are mostly on well drained to excessively drained soils. Two smaller areas are around McIntosh and Orange Lake and around Citra. In these areas the soils are well drained, somewhat poorly drained, and poorly drained. In the poorly drained soils, the root zone is restricted by a water table that is near the surface during wet periods. Water control is needed. The water table must be kept below a depth of 3 feet so that the trees can have a good root system. No drainage is needed on the well drained soils, but irrigation is essential during droughty periods. A high level of management is required for all groves. Although much of the survey area is moderately well suited or well suited to citrus, all groves must be protected from damaging cold.

Management is not described in detail in this survey, but is outlined briefly in each capability unit description. Suggested management for different crops on different kinds of soil can change as information becomes available from experiment stations, growers, and ranchers. Current information regarding kinds of crops, improved varieties of plants, and management can be obtained from a local representative of the Soil Conservation Service, the University of Florida Agricultural Experiment Stations, and the Agricultural Extension Service.

### *Capability grouping*

Capability grouping shows, in a general way, the suitability of soils for most kinds of field crops. The soils are grouped according to their limitations when used for field crops, the risk of damage when they are used, and the way they respond to treatment. The grouping does not take into account major and generally expensive landforming that would change slope, depth, or other characteristics of the soils; does not take into consideration possible but unlikely major reclamation projects; and does not apply to rice, cranberries, horticultural crops, or other crops requiring special management.

Those familiar with the capability classification can infer from it much about the behavior of soils when used for other purposes, but this classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for range, for forest trees, or for engineering.

In the capability system, all kinds of soil are grouped at three levels: the capability class, the subclass, and the unit. These levels are described in the following paragraphs.

CAPABILITY CLASSES, the broadest groups, are designated by Roman numerals I through VIII. The numerals indicate progressively greater limitations and narrower choices for practical use, defined as follows:

Class I soils have few limitations that restrict their use.

Class II soils have moderate limitations that reduce the choice of plants or require moderate conservation practices.

Class III soils have severe limitations that reduce the choice of plants, require special conservation practices, or both.

Class IV soils have very severe limitations that reduce the choice of plants, require very careful management, or both.

Class V soils are not likely to erode, but have other limitations, impractical to remove, that limit their use largely to pasture or range, woodland, or wildlife.

Class VI soils have severe limitations that make them generally unsuitable for cultivation and limit their use largely to pasture or range, woodland, or wildlife.

Class VII soils have very severe limitations that make them unsuitable for cultivation and restrict their use largely to pasture or range, woodland, or wildlife.

Class VIII soils and landforms have limitations that preclude their use for commercial crop production and restrict their use to recreation, wildlife, or water supply, or to esthetic purposes.

CAPABILITY SUBCLASSES are soil groups within one class; they are designated by adding a small letter, *e*, *w*, *s*, or *c*, to the class numeral, for example, IIe. The letter *e* shows that the main limitation is risk of erosion unless close-growing plant cover is maintained; *w* shows that water in or on the soil interferes with plant growth or cultivation (in some soils the wetness can be partly corrected by artificial drainage); *s* shows that the soil is limited mainly because it is shallow, droughty, or stony; and *c*, used in only some parts of the United States, shows that the chief limitation is climate that is too cold to too dry.

In class I there are no subclasses because the soils of this class have few limitations. Class V can contain, at the most, only the subclasses indicated by *w*, *s*, and *c* because the soils in class V are subject to little or no erosion, though they have other limitations that restrict their use largely to pasture or range, woodland, wildlife, or recreation.

CAPABILITY UNITS are soil groups within the subclasses. The soils in one capability unit are enough alike to be suited to the same crops and pasture plants, to require similar management, and to have similar productivity and other responses to management. Thus, the capability unit is a convenient grouping for making many statements about management of soils. Capability units are generally designated by adding an Arabic numeral to the subclass symbol, for example, IIe–2 or IVw–3. Thus, in one symbol, the Roman numeral designates the capability class, or degree of limitation; the small letter indicates the subclass, or kind of limitation, as defined in the foregoing paragraphs; and the Arabic numeral specifically identifies the capability unit within each subclass.

### *Management by capability units*

The following pages describe the capability units in the Marion County Area and suggest the use and management of the soils.

A few mapping units are not assigned to capability units because they cannot be used for crops. These mapping units are Arredondo-Urban land complex, Blichton-Urban land complex, Hague-Urban land complex, Sparr-Urban land complex, and Urban land. Areas of these mapping units are partly covered with houses and other buildings, streets, parking lots, and other structures.

#### CAPABILITY UNIT I–1

Zuber loamy sand, 0 to 2 percent slopes, the only soil in this unit, is a nearly level, well drained sandy soil having a clayey subsoil. It occurs as small areas in the uplands.

This soil has a deep root zone. It is easy to keep in good tilth. Available water capacity is low in the sandy layers and medium to high in the clayey subsoil. Natural fertility is low in the sandy layers and medium in the subsoil. Permeability is rapid in the sandy layers and moderately slow in the subsoil. Organic-matter content is low. Rainfall is readily absorbed and retained by the soil. Runoff during rainfall is slow, and the hazard of erosion is slight.

This soil has few limitations and is well suited to a wide variety of crops. Corn, peanuts, watermelons, tomatoes, and most other locally grown crops grow well if the soil is kept in good tilth. Soil-improving cover crops, the return of all crop residue, adequate fertilization, and lime are required. No special erosion control is needed.

Citrus is well suited, but most groves are subject to frequent damaging cold. Cover crops between the trees, minimum tillage, and applications of fertilizer are essential. Supplemental irrigation during droughty periods is beneficial.

Improved pasture is also well suited. Bahiagrass, improved bermudagrass, and hairy indigo grow well if they are properly established, fertilized, and managed. White clover is not well suited; if grown, it requires supplemental irrigation.

#### CAPABILITY UNIT IIe–1

Zuber loamy sand, 2 to 5 percent slopes, the only soil in this unit, is a gently sloping, well drained sandy soil having a clayey subsoil. It occurs as small areas in the uplands.

This soil has a deep root zone. It is easy to keep in good tilth. Available water capacity is low in the sandy layers and medium to high in the clayey subsoil. Natural fertility is low in the sandy layers and medium in the subsoil. Permeability is rapid in the sandy layers and moderately slow in the subsoil. Organic-matter content is low. The soil responds well to fertilization and lime. Runoff during rainfall is medium in unprotected areas, and the erosion hazard is moderate.

This soil is well suited to cultivated crops, but limitations are moderate. If well managed, such crops as corn, peanuts, winter grain, tomatoes, watermelons, cucumbers, okra, and cantaloupes grow well. Moderate erosion control measures are needed, including contour cultivation, crop rotations, soil-improving cover crops, and the return of all crop residue. Adequate seedbed preparation, adequate fertilization, and lime are required for maximum yields. Supplemental irrigation during droughty periods is beneficial.

Citrus is well suited, but most groves must be protected from damaging cold. A close-growing cover crop between the trees to protect the soil from erosion, minimum tillage, and adequate fertilization are essential. All crop residue should be left on the soil or plowed under. Supplemental irrigation during droughty periods is beneficial.

Improved pasture of bahiagrass, improved bermudagrass, and hairy indigo is also well suited. For vigorous plants and the best yields, fertilization, lime, and controlled grazing are required. White clover is not well suited; if grown, it requires supplemental irrigation.

### CAPABILITY UNIT IIe-2

In this unit are gently sloping, well drained sandy soils having a loamy subsoil within a depth of 20 to 40 inches. They occur as small to large areas in the uplands.

Available water capacity is low in the sandy layers and medium to high in the subsoil. Natural fertility also is low in the sandy layers and medium to high in the subsoil. Permeability is rapid in the sandy layers and moderate or moderately rapid in the loamy subsoil. Organic-matter content is low. The root zone is well aerated and is more than 60 inches deep. The hazard of erosion is moderate in unprotected areas.

These soils have moderate limitations, but are well suited to cultivated crops. General farm crops and special crops grown in the area are highly productive if well managed. The return of all crop residue, soil-improving cover crops, lime, and adequate fertilization are needed. An adequate plant cover is essential during periods when the hazard of erosion is critical. Most crops can be grown without irrigation, but supplemental irrigation is beneficial during droughty periods.

Citrus is well suited, but most groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, lime, fertilization, and irrigation are essential.

Improved pasture is also well suited. Deep-rooting grasses and legumes grow well if they are well managed. Good establishment, fertilization, lime, and controlled grazing are required. Deep-rooting grasses are little affected by drought. Shallow-rooting pasture plants are unsuited because little water is available in the sandy layers during dry periods. White clover is not well suited; if grown, it requires supplemental irrigation.

### CAPABILITY UNIT IIw-1

In this unit are somewhat poorly drained, nearly level to gently sloping sandy soils having a loamy subsoil within a depth of 20 to 40 inches. They are in the uplands and the flatwoods.

Available water capacity is very low or low in the sandy layers and medium in the loamy subsoil. Also, natural fertility is very low or low in the sandy layers and medium in the subsoil. Permeability is rapid in the sandy layers and moderate or moderately rapid in the subsoil. Organic-matter content is low.

The water table fluctuates between 30 and 60 inches for periods of about 1 month to 4 months. During most years, it is within a depth of 15 to 30 inches for periods of about 1 week to 2 months. During dry periods, it is below 60 inches. The root zone is deep, but the growth of roots, as well as the movement of water and air, is somewhat restricted by the water table. In unprotected gently sloping areas the hazard of erosion is moderate.

The soils have moderate limitations, but are well suited to most cultivated crops grown in the area. Corn, tomatoes, pepper, and cabbage grow well. If well managed, peanuts and watermelons also grow well. Although drainage is restricted in the lower part of the subsoil, no special water control is needed for most crops. The soils retain plant nutrients and respond well to fertilization and lime. Crop residue management, soil-improving cover crops, adequate seedbed preparation, lime, and fertilization are needed. Irrigation during droughty periods may be needed for some high-value crops. Where the slope is 2 to 5 percent, moderate erosion control is needed.

If well managed, citrus is suited, but the groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, and adequate amounts of lime and fertilizer are also needed.

Improved pasture of improved bahiagrass is also well suited. Bermudagrass grows well if the pasture is well managed. Good establishment, adequate amounts of fertilizer and lime, and proper grazing are essential. The soils are suited to all deep-rooting grasses and legumes grown in the area. They are not well suited to white clover.

### CAPABILITY UNIT IIw-2

Micanopy fine sand, 2 to 5 percent slopes, the only soil in this unit, is a somewhat poorly drained sandy soil having a clayey subsoil.

Available water capacity is low in the sandy layers and medium to high in the subsoil. Permeability is rapid in the sandy layers and slow in the clayey subsoil. Natural fertility is low to medium. Organic-matter content is low.

The growth of roots is somewhat restricted below a depth of about 30 inches in the slowly permeable, poorly aerated clayey subsoil. The water table fluctuates between 20 and 60 inches for 2 to 5 months during most years. It recedes to a depth of more than 60 inches during dry periods. The hazard of erosion is moderate in unprotected areas.

This soil has moderate limitations, but is suited to most crops grown in the area. The growth of roots is somewhat restricted in the slowly permeable, poorly aerated subsoil. No special water control is needed for most crops. If well managed, most special crops and such farm crops as corn and peanuts grow well. Good management includes planting soil-improving cover crops, leaving all crop residue on the soil or plowing it under, and applying adequate amounts of fertilizer and lime. Moderate erosion control is required.

If well managed, citrus is suited, but the groves are subject to damaging cold. The growth of roots is somewhat restricted in the lower part of the subsoil by the water table and poor aeration. Cover crops between the trees, minimum tillage, and adequate amounts of lime and fertilizer are essential.

Improved pasture is well suited. If well managed, bahiagrass and improved bermudagrass are of high quality. Good establishment, adequate fertilization, lime, and proper grazing are needed. White clover is not well suited.

#### CAPABILITY UNIT IIs-1

Kendrick loamy sand, 0 to 2 percent slopes, the only soil in this unit, is a nearly level, well drained sandy soil with a predominantly loamy subsoil. It occurs as small areas in the uplands.

The root zone is well aerated and is more than 60 inches deep. Available water capacity is low in the sandy layers and medium to high in the loamy subsoil. Also, natural fertility is low in the sandy layers and medium to high in the subsoil. Permeability is rapid in the sandy layers and moderate in the subsoil. Organic-matter content is low. There is no hazard of erosion because very little surface water runs off during rainfall.

The soil has moderate limitations, but is well suited to cultivated crops. Because the water-holding capacity in the subsoil is good, most crops can be grown without irrigation. Irrigation is needed during droughty periods, however, for good growth of high-value crops, such as watermelons, tomatoes, and peanuts. Soil-improving cover crops, the return of all crop residue to the soil, and adequate fertilization are needed for all crops.

Citrus is well suited, but extreme care must be taken to protect the groves from damaging cold. Cover crops between the trees, minimum tillage, lime, fertilization, and irrigation during droughty periods should be considered.

Improved pasture is also well suited. Such improved pasture plants as improved bermudagrass, bahiagrass, and hairy indigo grow well if they are properly established, fertilized, limed, and managed. Improved pasture of deep-rooting grasses is little affected by drought. A shallow-rooting plant, such as white clover, however, is not suited because little water is available in the sandy layers.

#### CAPABILITY UNIT IIIe-1

In this unit are well drained, sloping sandy soils with a loamy subsoil. They occur as small areas in the uplands.

The root zone is well aerated and is more than 60 inches deep. Available water capacity is low in the sandy layers and medium to high in the subsoil. Natural fertility also is low in the sandy layers and medium to high in the subsoil. Permeability is rapid in the sandy layers and moderate or moderately rapid in the loamy subsoil. Organic-matter content is low. The slope and a low infiltration rate result in medium runoff and a moderate erosion hazard in unprotected areas.

These soils have severe limitations, but are moderately well suited to a variety of crops, including corn, peanuts, tomatoes, and watermelons. Intensive erosion control and other management are needed, including contour cultivation of row crops grown in alternate strips with close-growing crops, the return of all crop residue to the soil, soil-improving crops, lime, and adequate fertilization. Irrigation is needed during droughty periods.

Citrus is well suited, but extreme care must be taken to protect the groves from extremely cold temperatures. Cover crops between the trees, minimum tillage, and contour planting and cultivation minimize erosion. Irrigation during droughty periods is beneficial.

Improved pasture of all deep-rooting grasses and legumes common to the area is also well suited. These pasture plants grow well if they are properly established, fertilized, limed, and managed. Establishing a good sod as soon as possible after land preparation helps to control erosion.

#### CAPABILITY UNIT IIIe-2

In this unit are well drained to somewhat poorly drained, sloping sandy soils with a clayey subsoil. They occur as small areas in the uplands.

Available water capacity is low in the sandy layers and medium to high in the subsoil. Permeability is rapid in the sandy layers and slow or moderately slow in the subsoil. Natural fertility is low to medium. The soils respond well to fertilization. They can be kept in good tilth.

Although these soils have a deep root zone, the lower part of the subsoil is poorly aerated in some areas. In these areas the water table fluctuates between 20 and 60 inches for 2 to 5 months during most years and recedes to a depth of more than 60 inches during dry periods. The slope and a low infiltration rate result in rapid runoff and a severe erosion hazard in unprotected areas.

These soils have severe limitations, but are well suited to most general farm crops grown in the area. Corn and peanuts are the best crops. Intensive erosion control is needed. Contour cultivation of row crops, a close-growing crop in the crop rotation at least two-thirds of the time, soil-improving cover crops, adequate fertilization, and lime are essential. All crop residue should be left on the soil or plowed under. Irrigation of some high-value crops is required during droughty periods.

Citrus is well suited, but the groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, contour planting and cultivation, fertilization, and irrigation during droughty periods are essential.

Improved pasture of all deep-rooting grasses and legumes common to the area is also well suited. These pasture plants grow well if they are properly established, fertilized, limed, and managed. Establishing a good sod as soon as possible after land preparation helps to control erosion. White clover is not suited.

#### CAPABILITY UNIT IIIe-3

Lochloosa fine sand, 5 to 8 percent slopes, the only soil in this unit, is a somewhat poorly drained sandy soil that has a loamy subsoil within a depth of 20 to 40 inches. It occurs as small areas in the uplands.

Available water capacity is low in the sandy layers and medium in the subsoil. Natural fertility also is low in the sandy layers and medium in the subsoil. Permeability is rapid in the sandy layers and moderate in the loamy subsoil. Organic-matter content is low.

The water table fluctuates between 30 and 60 inches for 1 month to 3 months during most years. It is at a depth of about 15 inches for periods of about 1 week to 3 weeks. The root zone is deep, but the growth of roots is somewhat restricted by the water table. Runoff during rainfall is medium in unprotected areas, and the hazard of erosion is moderate.

This soil is moderately well suited to a variety of crops grown in the area, but is severely limited by the erosion hazard and somewhat limited by the water table. The rise of capillary water from the water table, however, supplements the little available water in the sandy layers. Intensive erosion control is needed. Contour cultivation of row crops grown in alternate strips with close-growing crops, the return of all crop residue to the soil, soil-improving cover crops, adequate fertilization, and lime are essential. Most crops can be grown without irrigation, but some high-value crops require irrigation during droughty periods.

Citrus is well suited, but the groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, adequate fertilization, and lime are needed.

Improved pasture of bahiagrass and improved bermudagrass is also well suited. These plants grow well if properly established, fertilized, limed, and managed. Establishing a good sod as soon as possible after land preparation helps to control erosion. White clover and other shallow-rooting pasture plants are not well suited because little water is available in the root zone during dry periods.

### CAPABILITY UNIT IIIw-1

Adamsville sand, 0 to 5 percent slopes, the only soil in this unit, is a somewhat poorly drained, nearly level to gently sloping soil that is sandy to a depth of 80 inches or more.

Applied plant nutrients are readily leached from this soil. Permeability is rapid. Natural fertility and organic-matter content are low. Available water capacity is low to very low, but the soil benefits from the rise of capillary water from the water table. Because the available water capacity is low to very low, the upper part of the root zone can be slightly droughty during dry periods. During wet periods, however, it is saturated with water. The water table fluctuates between 20 and 40 inches for 2 to 6 months during most years. During wet periods it can rise to within 10 to 20 inches of the surface, and during dry periods it recedes to a depth of more than 40 inches.

This soil has severe limitations and is only moderately well suited to general farm crops. It is suited to most special crops if excess water is removed during wet periods and subsurface irrigation is used during dry periods. Intensive soil-improving measures are needed, including the return of all crop residue to the soil, soil-improving cover crops, adequate fertilization, lime, and a good crop rotation.

Citrus is not suited unless bedding or some other drainage method is used. Most groves require protection from damaging cold. The water table prevents the deep, well developed root system desirable for the trees. Soil-improving measures are essential.

Improved pasture is moderately well suited. Most grasses and deep-rooting legumes grown in the area are of good quality for pasture if they are properly established, fertilized, limed, and grazed.

### CAPABILITY UNIT IIIw-2

In this unit are poorly drained, gently sloping sandy soils with a clayey subsoil. They occur as small areas in the uplands.

Available water capacity is low to medium in the sandy layers and medium to high in the subsoil. Permeability is rapid to moderately rapid in the sandy layers and slow or very slow in the subsoil. Natural fertility is medium, and organic-matter content is low to medium.

The water table is within 10 inches of the surface for 1 month to 4 months during wet periods. The growth of roots is restricted by the slowly permeable or very slowly permeable, poorly aerated subsoil and the water table. Runoff is medium during rainfall as a result of a low infiltration rate. Erosion is a problem. The surface must be protected by a good plant cover.

These soils have severe limitations and are only moderately well suited to cultivated crops. Control of erosion and removal of excess water are needed. If well managed, the soils are suited to many special crops, such as cabbage, tomatoes, watermelons, peppers, and cucumbers. Water control, contour cultivation, crop rotation, soil-improving cover crops, the return of all crop residue to the soil, good seedbed preparation, and adequate fertilization are required.

Citrus is not suited. If citrus is grown, extreme care must be taken to protect the groves from damaging cold. The slowly permeable or very slowly permeable, poorly drained clayey subsoil restricts the growth of roots. Removal of excess water is beneficial, but a good tile drainage system is not feasible because the subsoil is clayey and slowly permeable or very slowly permeable.

Improved pasture of most grasses and legumes grown in the area is well suited. If well managed, these plants are of high quality for pasture. Clover-grass pasture is well suited if it is properly fertilized, limed, and managed.

### CAPABILITY UNIT IIIw-3

Eaton loamy sand, the only soil in this unit, is a nearly level, poorly drained sandy soil that has a clayey subsoil within a depth of 20 to 40 inches. It occurs as broad areas in the flatwoods.

Available water capacity is low in the sandy layers and medium to high in the subsoil. Permeability is rapid in the sandy layers and slow in the clayey subsoil. Natural fertility is medium, and organic-matter content is low.

Wetness is the chief limitation. Water moves readily through the sandy layers, but slowly through the clayey subsoil. As a result, internal drainage is severely restricted even in the sandy layers. The water table is within 10 inches of the surface for 2 to 4 months during most years.

This soil has severe limitations for cultivated crops. If well managed, it is well suited to many vegetable crops grown in the area. Removal of excess water during wet periods and subsurface irrigation during dry periods are essential. A close-growing, soil-improving crop should be grown at least two-thirds of the time. All crop residue should be left on the soil or plowed under. Fertilizer and lime should be added according to the needs of the crop.

Citrus is poorly suited because wetness severely restricts the growth of tree roots and the trees are subject to damaging cold.

Improved pasture of locally grown improved grasses and legumes is well suited. If well managed, the pasture is of good quality. If clover is grown, a subirrigation system is needed to assure successful growth during dry periods. For healthy plants and the highest yields, grazing should be carefully controlled.

### CAPABILITY UNIT IIIw-4

In this unit are nearly level, very poorly drained soils. They have a thick, black and very dark gray sandy surface layer over grayish sandy underlying layers that extend to a depth of more than 80 inches. They occur in depressions, on low flats, and along poorly defined drainageways mostly in the flatwoods.

Permeability is rapid. Natural fertility and organic-matter content are high in the surface layer and low in the underlying layers. The soils respond well to fertilization, but applied plant nutrients are rapidly leached through the sandy surface layer and underlying layers.

Wetness is the chief limitation. The water table is within 10 inches of the surface for more than 6 months each year, and most depressions are covered with water for 6 months or more. Well designed ditches to remove excess surface water and control structures to regulate internal drainage are needed. Available water capacity is medium to high in the surface layer. It is low or very low in the underlying layers, but these layers are generally wet because of the high water table.

These soils have severe limitations for cultivated crops. If water is controlled, they are well suited to many locally grown vegetable crops. For economy of drainage, large uniform areas should be cropped. The rapid removal of excess water during rainy periods, good seedbed preparation, crop rotation, the return of all crop residue to the soil, soil-improving cover crops, and adequate fertilization are needed.

Citrus is not suited because the soil is excessively wet and the groves are subject to damaging cold.

Improved pasture is poorly suited unless the soil is drained. If well managed, such plants as improved bahiagrass and white clover are well suited. For plant vigor and the best yields, grazing should be controlled.

### CAPABILITY UNIT IIIw-5

In this unit are nearly level, poorly drained sandy soils that have a loamy subsoil within a depth of 20 to 40 inches or a clayey subsoil within a depth of 20 inches. They occur as small areas in the uplands.

The growth of roots is restricted by the water table. The water table is within 10 inches of the surface for 1 month to 4 months during most years. The surface may be briefly covered with water during extended wet periods.

Available water capacity is low to medium in the sandy layers and medium to high in the subsoil. Natural fertility also is low to medium in the sandy layers and medium to high in the subsoil. Permeability is rapid in the sandy layers and moderate to slow in the subsoil. Organic-matter content is low to medium.

These soils have severe limitations for cultivated crops. Water control is needed. In many areas, however, water control is hard to establish because drainage outlets are lacking. Corn can be grown in some areas, but the best crops are some special crops and many of the vegetable crops. Soil-improving cover crops and the return of all crop residue to the soil are required.

Citrus is generally not suited unless intensively managed. Keeping the water table below 3 feet at all times is essential for good root growth. In many areas, air drainage is poor and the trees are frequently damaged by freezing unless they are adequately protected.

Improved pasture is well suited. If well managed, improved bahiagrass and white clover grow well. The removal of excess water after heavy rainfall, adequate fertilization, and lime are essential. Controlled grazing is needed to maintain plant vigor.

### CAPABILITY UNIT IIIw-6

In this unit are nearly level, poorly drained sandy soils with a clayey subsoil. They occur as small and large areas in the flatwoods.

Available water capacity is low or medium in the sandy layers and high in the subsoil. Permeability is rapid to moderately rapid in the thin sandy layers and slow to very slow in the clayey subsoil. Natural fertility is medium, and organic-matter content is moderately low.

Wetness and the depth to the clayey subsoil are the chief limitations. The water table is within 10 inches of the surface for 2 to 6 months during most years. The slowly permeable subsoil makes water control difficult. The soils are subject to waterlogging during wet periods even if a good drainage system is established.

These soils have severe limitations for cultivated crops. Drainage or other water-control measures are needed before the soils can be cultivated, and crops are limited to those that can tolerate slightly wet conditions. If adequately drained, the soils are suited to such truck crops as cabbage, peppers, tomatoes, turnips, strawberries, and beans. Surface drainage systems should be carefully installed and maintained. Permeability in the shallow clayey subsoil is too slow for effective subirrigation. Unless the rate of water movement and the amount of water are carefully controlled, puddles form. For the best yields, adequate fertilization is needed. The soils require a moderate amount of lime if they are strongly acid and a lesser amount if less acid.

Citrus is not suited. The growth of roots is severely restricted by the wet, slowly permeable subsoil. The groves are highly susceptible to damaging cold.

Clover-grass pasture is well suited. It is of high quality if properly fertilized, limed, and managed. Removal of excess surface water during heavy rainfall is needed. Grazing should be rotated and controlled to permit good growth and to prevent puddling and packing.

### CAPABILITY UNIT IIIw-7

In this unit are gently sloping, poorly drained sandy soils that have a loamy subsoil within a depth of 20 to 40 inches and nearly level to gently sloping sandy soils that have a loamy and clayey subsoil below a depth of 40 inches.

Available water capacity is low to very low in the sandy layers and medium in the subsoil. Natural fertility also is low to very low in the sandy layers and medium in the subsoil. Permeability is rapid in the sandy layers and moderate or moderately slow in the subsoil. Organic-matter content is low.

The water table is within 10 inches of the surface during wet periods, and roots are restricted. In gently sloping areas the hazard of erosion is moderate unless the surface is protected.

These soils have severe limitations for cultivated crops. The number of suitable crops is limited. If water and erosion are controlled, the soils are suited to some vegetable crops. If well managed, they are moderately well suited to corn and peanuts. Contour cultivation of row crops; close-growing, soil-improving cover crops; the return of all crop residue to the soil; and the removal of excess water with tile drains or ditches are needed.

Citrus is moderately well suited if a carefully designed system of water control is installed. Subsurface drains help control ground water and improve the root system of the trees. The water table should be below 3 feet at all times. In many areas, the air drainage is poor and the trees are frequently damaged by cold unless they are adequately protected. Cover crops between the trees, minimum tillage, and adequate fertilization are essential.

Improved pasture is well suited (fig. 5). Most grasses and legumes, for example, improved bahiagrass, bermudagrass, and clover, grow well if properly established, fertilized, limed, and grazed.

### CAPABILITY UNIT IIIw-8

In this unit are nearly level, very poorly drained soils in freshwater marshes, ponds, and swamps. In many areas they have organic layers more than 50 inches thick, but in some areas they have an organic layer that is only 16 to 40 inches deep over mineral soil. In some areas organic and mineral soils are intermixed.

The water table is within 10 inches of the surface. It severely restricts roots. The surface is covered with water for 8 to 12 months during most years. The organic layers have a very high available water capacity and rapid permeability. They have medium natural fertility and a very high content of organic matter.

These soils have severe limitations. They are not suited to cultivated crops unless reclaimed from their natural swampy or marshy conditions. After reclamation there is a continuing subsidence as a result of oxidation. This subsidence can be reduced if the water level is lowered just enough to permit healthy root growth during the cropping season and is raised after the crops are harvested. If water is controlled, the soils are well suited to certain crops, especially most vegetable crops. A drainage system of canals, lateral drainage ditches, mole drains, and tile drains can be established. Control structures are required in the main canals to keep the water at a proper level for crops and to permit flooding when the soil is not cropped.

These soils are high in nitrogen, but are low in other plant nutrients. They require frequent applications of fertilizer high in potash, phosphate, and minor elements. The acid soils require a large amount of lime.

These soils are not suited to citrus and under natural conditions are not suited to improved pasture. Under good management and adequate water control, however, they are suited to pangolagrass and improved bahiagrass. Excess water must be drained off the surface. The water table must be kept within a few inches of the surface. Deep drainage causes rapid oxidation of the soil. Adequate fertilization and lime are needed for good yields. Controlled grazing is needed for maximum yields.

### CAPABILITY UNIT IIIw-9

Lynne sand, the only soil in this unit, is a nearly level, poorly drained soil. It typically has weakly cemented sandy layers that are between depths of 20 and 31 inches and are underlain by a clayey subsoil. It occurs as broad areas in the flatwoods.

Available water capacity is low in the noncemented sandy layers, medium in the weakly cemented sandy layers, and medium to high in the subsoil. Permeability is rapid in the noncemented sandy layers, moderate in the weakly cemented layers, and slow in the clayey subsoil. Natural fertility and organic-matter content are low in the sandy layers. The growth of roots is restricted by a fluctuating water table. The water table rises to within 10 inches of the surface during wet periods. During dry periods, it recedes to a depth of more than 40 inches and the sandy layers are somewhat droughty.

This soil has severe limitations for cultivated crops. If intensively managed, it is well suited to most vegetable crops grown in the area. Removal of excess water during wet periods and subsurface irrigation during dry periods are needed. Vegetable crops should be grown in rotation with close-growing, soil-improving cover crops. All crop residue should be left on the soil or plowed under. Fertilizer and lime should be added according to the needs of the crop.

Citrus is poorly suited. The groves are subject to freezing temperatures. The fluctuating water table, the restricted root zone, and the thick, highly leached subsurface layer adversely affect tree growth.

If well managed, improved pasture of locally grown grasses and legumes is well suited. A simple drainage system removes excess water during wet periods. Clo-

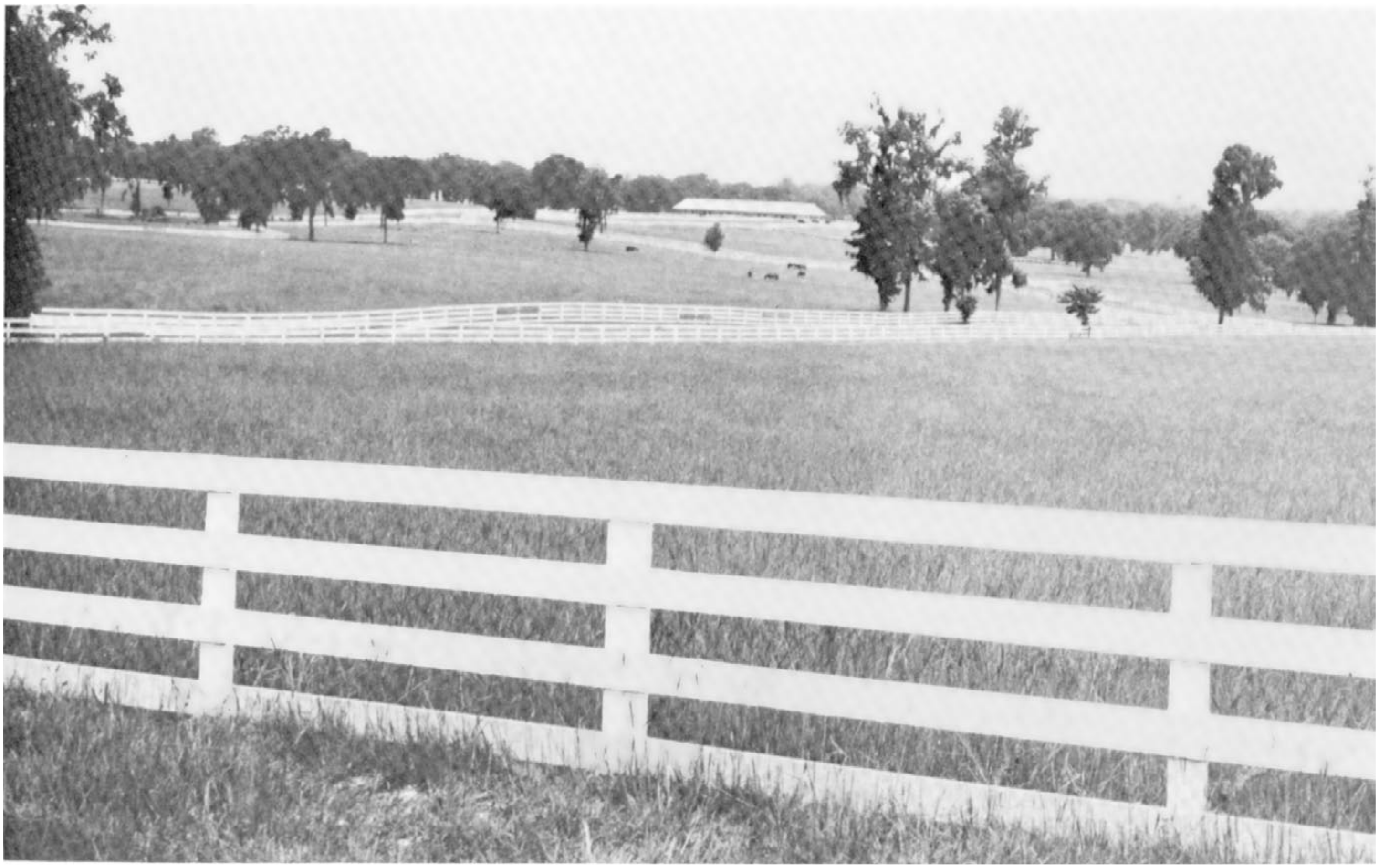

*Figure 5.*—**Well managed pasture of improved bahiagrass on Blichton sand, 2 to 5 percent slopes.**

ver requires subirrigation during dry periods. For healthy plants and high yields, grazing should be carefully controlled.

### CAPABILITY UNIT IIIs-1

In this unit are well drained, nearly level to gently sloping soils in the uplands. They generally are sandy to a depth of more than 40 inches and loamy below. In places they are loamy sand to a depth of more than 90 inches. On a small acreage, fragments of soft and hard limestone are in the soil, limestone bedrock is at a depth of about 6 to 63 inches, and limestone boulders are on the surface.

The root zone is well aerated and is more than 80 inches deep. Organic-matter content is low. Natural fertility is low to medium. These soils have low or very low available water capacity and rapid permeability in the sandy layers and medium to high available water capacity and moderate permeability in the loamy layers. The soil that is underlain by limestone has low to very low available water capacity and rapid permeability in the sandy layers and medium available water capacity and moderately rapid permeability in the loamy layer above the limestone. Soil blowing is active, especially during dry periods, and the surface should be protected at all times (fig. 6).

These soils have severe limitations and are only moderately well suited to most locally grown cultivated crops. Cultivation is difficult in the areas where limestone is near the surface and limestone boulders are on the surface. If it is feasible, the limestone boulders should be removed. Watermelons and tomatoes are the more successful special crops. Peanuts are also well suited. Irrigation is needed during droughty periods. High-value crops require supplemental irrigation. Planting soil-improving cover crops, leaving all crop residue on the soil or plowing it under, and applying adequate amounts of fertilizer and lime are essential. Row crops should be planted in alternating strips with close-growing crops.

Citrus is well suited, but intensive methods must be used to protect the groves from extreme cold. Cover crops between the trees, minimum tillage, lime, fertilization, and irrigation during droughty periods are needed.

Improved pasture of most deep-rooting grasses and legumes grown in the area is well suited. Shallow-rooting legumes and grasses are not suited because the soils are droughty. For a good plant cover and good yields, proper establishment, fertilization, lime, and proper grazing are required. Care must be taken in mowing in areas where rock outcrop and boulders are

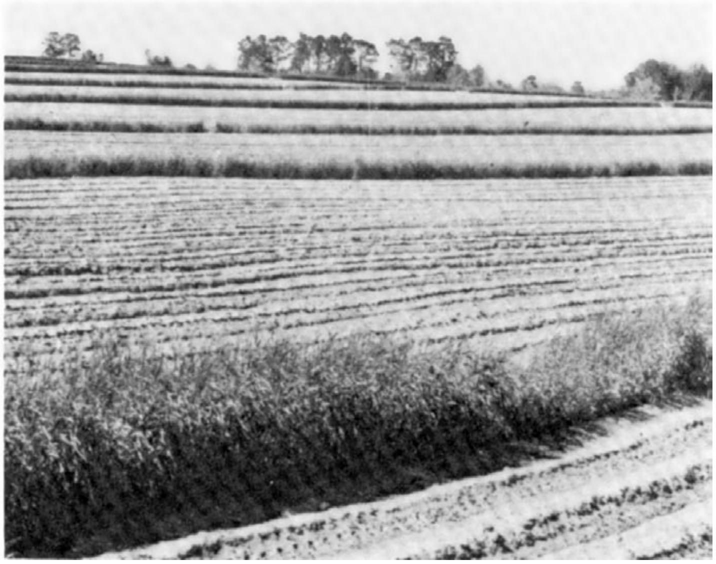

*Figure 6.*—**Rye strips on Arredondo sand, 0 to 5 percent slopes. Rye strips protect the soil from soil blowing.**

on the surface. If it is feasible, the boulders should be removed when the pasture is established.

### CAPABILITY UNIT IIIs-2

Tavares sand, 0 to 5 percent slopes, the only soil in this unit, is a nearly level to gently sloping, moderately well drained soil that is sandy to a depth of more than 80 inches.

Natural fertility and organic-matter content are low. Permeability is very rapid. Available water capacity is very low in all layers. The soil is favorably influenced, however, by a water table that fluctuates between 40 and 60 inches during most periods. Soil blowing is active in unprotected areas.

This soil has severe limitations for cultivated crops. It is of limited use for general farm crops because it is droughty and the leaching of plant nutrients is rapid. During dry periods very little water is available to plants because the water table is well below the root zone. Irrigation is needed during these periods. Irrigation of high-value crops is generally feasible. Good soil-improving measures are needed, including the return of all crop residue to the soil, soil-improving cover crops, and adequate amounts of fertilizer and lime.

Citrus is well suited, but the groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, adequate fertilization, and lime are required. The trees generally are not seriously affected by drought because roots commonly extend into areas where moisture is available. During periods of high rainfall some trees are damaged by a high water table.

Improved pasture is well suited. Deep-rooting grasses and legumes grow well if they are properly established, limed, fertilized, and managed. The pasture is little affected by drought.

### CAPABILITY UNIT IIIs-3

Sparr fine sand, 0 to 5 percent slopes, the only soil in this unit, is a nearly level to gently sloping, somewhat poorly drained soil that has a loamy and clayey subsoil below a depth of 40 inches. It occurs as small and large areas in the flatwoods and uplands.

Natural fertility and organic-matter content are low. Permeability is rapid in the sandy layers and moderate in the subsoil. Available water capacity is low in the sandy layers and medium or high in the subsoil.

The rapid leaching of plant nutrients through the thick sandy layers is a limitation. The water table is 20 to 30 inches below the surface for only brief periods during most years, but does not seriously affect the growth of roots in the upper 30 inches. It fluctuates between 30 and 60 inches for about 1 month to 4 months, but recedes to a depth of more than 60 inches during dry periods.

This soil has serious limitations for cultivated crops. Irrigation is needed during droughty periods. High-value crops require supplemental irrigation. Soil improvement is essential. Planting soil-improving cover crops and leaving all crop residue on the soil or plowing it under help in maintaining fertility and organic-matter content.

Citrus is suited, but most groves must be protected from extreme cold. Cover crops between the trees, minimum tillage, adequate fertilization, and lime are needed. The roots of the citrus trees commonly extend into areas where moisture is available. As a result the trees are not seriously affected by drought.

Improved pasture is well suited. Deep-rooting grasses and legumes grow well if they are properly established, limed, fertilized, and managed. A shallow-rooting plant, such as white clover, is not suited. For vigorous plants and maximum yields, controlled grazing is needed.

### CAPABILITY UNIT IVw-1

Wacahoota loamy sand, 5 to 8 percent slopes, the only soil in this unit, is a poorly drained soil that has a loamy subsoil within a depth of 20 to 40 inches. It occurs in the uplands as small, sharp-breaking areas or as large areas on long slopes.

Natural fertility is low in the sandy layers and medium in the loamy subsoil. Available water capacity is low in the sandy layers and low to medium in the subsoil. Permeability is rapid in the sandy layers and moderate in the subsoil. Organic-matter content is low. The growth of roots is limited by seepage water within 10 inches of the surface during wet periods. Runoff during rainfall is medium on unprotected slopes, and the hazard of erosion is moderate.

This soil has very severe limitations and is only moderately well suited to most cultivated crops. Control of wetness and erosion is needed. Wetness is difficult to control. Such crops as corn, peanuts, tomatoes, and watermelons are moderately well suited if they are well managed. Planting crops on the contour, planting soil-improving cover crops, and returning all crop residue to the soil are essential.

Citrus is well suited, but extreme care must be taken to protect the groves from damaging cold. The water table must be at least 3 feet below the surface at all times. Minimum tillage and cover crops between the trees are required.

Improved pasture of grasses and legumes grown in the area is well suited. Establishing sod as soon as possible after land preparation helps in controlling erosion. Controlled grazing and regular applications of fertilizer and lime are needed to maintain the plant cover.

### CAPABILITY UNIT IVw-2

In this unit are nearly level, poorly drained sandy soils having a weakly cemented sandy layer that is at a depth of 26 to 39 inches and is underlain by a layer of loose sand and a loamy and clayey subsoil. In some areas they are intricately mixed with poorly drained and very poorly drained soils that are sandy to a depth of 80 inches or more. They occur as broad areas in the flatwoods and as areas in shallow depressions of the uplands.

The root zone is adversely affected by a seasonal high water table within 10 inches of the surface during wet periods. In depressions, the surface is covered with water for brief periods. During dry periods the water table recedes to a depth below 40 inches.

Available water capacity is mostly low to very low in the sandy layers, but is high in the surface layer of the very poorly drained soils. It is medium in the weakly cemented sandy layer and medium to high in the loamy and clayey subsoil. Permeability is rapid to very rapid in the sandy layers, moderate in the weakly cemented sandy layer, and moderately slow in the subsoil. Natural fertility and organic-matter content are generally low, but the organic-matter content in the surface layer of the very poorly drained soils is high. Plant nutrients leach rapidly through the sandy layers.

These soils have very severe limitations for cultivated crops. If water is controlled and the soil very intensively managed, they are moderately well suited to a number of vegetable crops. Rapid removal of excess water during high rainfall and subirrigation during dry periods are needed. Row crops should be rotated with close-growing, soil improving crops. All crop residue should be left on the soil or plowed under. Fertilizer and lime should be added according to the needs of the crops.

Citrus is poorly suited. Most areas are susceptible to freezing temperatures. The thick, highly leached, coarse textured layers, the fluctuating water table that restricts the growth of roots, and other poor soil qualities adversely affect the growth of citrus trees.

Improved pasture of locally grown grasses and legumes is moderately well suited. A simple drainage system that removes excess water during wet periods, adequate fertilization, lime, and controlled grazing are essential. Clover can be grown successfully if grass is grown as winter pasture. Irrigation is required during droughty periods.

### CAPABILITY UNIT IVw-3

In this unit are nearly level, poorly drained soils that are sandy to a depth of more than 80 inches or are sandy to a depth of more than 40 inches and loamy in the subsoil. They occur on broad flats and in depressions and sloughs of the flatwoods and in depressions in sandy ridges.

The water table is within 10 inches of the surface for 2 to more than 6 months during most years. It restricts the growth of roots. Available water capacity is low to very low in the sandy layers and medium in the subsoil. Permeability is very rapid in the sandy layers and moderately rapid in the subsoil. Natural fertility is low in the sandy layers and medium in the subsoil. Organic-matter content is low.

These soils have very severe limitations for cultivated crops. They are poorly suited to general farm crops, but are moderately well suited to a number of vegetable crops. Removal of excess water during wet periods and subsurface irrigation during dry periods are needed. Close-growing, soil-improving cover crops should be grown in rotation with row crops. All crop residue should be left on the surface or plowed under. Fertilizer should be added according to the needs of the crops.

Citrus is poorly suited. The high water table severely restricts the growth of roots. Air drainage is poor, and the groves are subject to frequent damaging cold.

Improved pasture of locally grown grasses and legumes is well suited to moderately well suited if it is properly established, fertilized, limed, and managed. A simple drainage system that removes excess water during wet periods is needed. Clover-grass pasture is well suited if it is adequately fertilized and well managed. Subirrigation is needed to assure good growth of clover during dry periods.

### CAPABILITY UNIT IVw-4

In this unit are gently sloping, poorly drained gravelly sandy soils with a clayey subsoil and gravelly sandy soils that have a loamy subsoil within a depth of 20 to 40 inches. They are in the uplands. The sandy layers and at least the upper 20 inches of the subsoil are, by volume, more than 35 percent gravel, pebbles, and rock fragments less than 3 inches in diameter. Rock commonly crops out in places.

Available water capacity is very low in the sandy layers, low to very low in the gravelly part of the subsoil, and medium to high in the nongravelly part. Permeability is rapid to moderately rapid in the sandy layers and very slow or moderate in the subsoil. If it is moderate in the subsoil, it is moderately slow in the underlying material. Natural fertility and organic-matter content are low to medium.

Water movement through the subsoil is somewhat restricted. After heavy rainfall the soils are quickly saturated and are excessively wet. The water table is within 10 inches of the surface during wet periods. The hazard of erosion is moderate in unprotected areas.

These soils have severe limitations for cultivated crops. The wetness and the large number of rock fragments and pebbles in the upper part of the soil and on the surface restrict the growth of roots and limit cultivation. The best suited crops have a shallow root zone. If crops are grown, intensive management can greatly increase the yields. The return of crop residue to the soil, soil-improving cover crops, adequate fertilization, lime, and a proper rotation system are needed.

Citrus is poorly suited. Poor soil qualities restrict the development of the deep root zone desirable for citrus trees. If groves are established, they require intensive protection from damaging cold. Intensive soil improvement, including good water control, is also required.

Improved pasture is moderately well suited, but many areas have too many rock outcrops and rock fragments for safe mowing. If well managed, the soils produce good quality pasture. Proper establishment, lime, fertilization, and controlled grazing are essential.

### CAPABILITY UNIT IVw-5

In this unit are poorly drained, sloping sandy soils with a loamy and clayey subsoil. They occur on seepy hillsides in the uplands.

The water table is within 10 inches of the surface during wet periods. The growth of roots is restricted by the water table and a slowly to very slowly permeable subsoil. Available water capacity is low to medium in the sandy layers, low to high in the loamy part of the subsoil, and medium to high in the clayey part. Natural fertility is medium, and the soils respond well to fertilization. Organic-matter content is medium. Response to artificial drainage is slow. The slope and a slow infiltration rate cause rapid runoff and a severe erosion hazard on unprotected slopes.

These soils have very severe limitations for cultivated crops and are poorly suited to most general farm crops. The slow removal of surface water is needed to control erosion. Seepage water must be intercepted. If well managed, the soils are suited to watermelons, tomatoes, cabbage, cucumbers, and some other vegetable crops. Contour cultivation, crop rotations, soil-improving cover crops, the return of all crop residue to the soil, good seedbed preparation, and adequate fertilization are required.

Citrus is generally not suited. The hazard of erosion is severe. The growth of tree roots is restricted. Establishing the required water control is difficult. If citrus is grown, the groves must be protected from damaging cold. Intensive management is needed.

Improved pasture of most grasses and legumes grown in the area is suited. If well managed, it is of good quality. Establishing sod as soon as possible after land preparation helps in controlling erosion. Controlled grazing and regular applications of fertilizer and lime are required to maintain the plant cover and to produce the highest yields.

### CAPABILITY UNIT IVs-1

Candler sand, 0 to 5 percent slopes, the only soil in this unit, is a nearly level to gently sloping, excessively drained soil. It is sand to a depth of more than 80 inches and has thin bands of loamy sand within a depth of 60 to 80 inches. It occurs as small and large areas on ridges in the uplands.

Natural fertility is low. Organic-matter content is very low. Available water capacity is mostly very low, and permeability is mostly very rapid. In the layers that have thin bands of loamy sand, however, available water capacity is low and permeability is rapid. The loose sandy surface is subject to soil blowing.

This soil has very severe limitations for cultivated crops. Droughtiness and the rapid leaching of plant nutrients reduce the variety of suitable crops. Watermelons are successfully grown. Tomatoes are also grown in many areas. Sprinkler irrigation of high-value crops is needed during droughty periods. The variety of crops that can be grown without irrigation is very limited. Intensive management is required if the soil is cultivated. Planting row crops in alternating strips with close-growing crops helps to prevent soil blowing. All crop residue should be left on the surface or plowed under. Soil-improving cover crops and a liberal amount of fertilizer are necessary.

Citrus is well suited, but the groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, adequate applications of fertilizer and lime, and irrigation during droughty periods are essential.

Improved pasture of a deep-rooting grass, such as bahiagrass, and a deep-rooting legume, such as hairy indigo, is well suited if it is carefully managed. Regular fertilization, lime, and controlled grazing are required.

### CAPABILITY UNIT IVs-2

In this unit are well drained soils that have sandy layers more than 40 inches deep over loamy layers and well drained soils that are loamy sand to a depth of more than 90 inches. They are in the uplands. Slopes are mostly 5 to 8 percent, but on a small acreage are 8 to 12 percent.

These soils are somewhat droughty during dry periods. Plant nutrients leach readily through the sandy layers. Permeability is rapid in the sandy layers and moderate in the loamy layers. Available water capacity is low or very low in the sandy layers and medium to high in the loamy layers. Natural fertility is low to medium. Organic-matter content is low. The soils are subject to erosion and soil blowing and must be protected by a good plant cover.

These soils have very severe limitations for cultivated crops. They require special soil-improving measures and erosion control if they are cultivated. The return of all crop residue to the soil, soil-improving cover crops, adequate fertilization, and a good conservation cropping system are essential. Row crops should be planted on the contour in alternating strips with close-growing crops. Irrigation of high-value crops is needed during droughty periods.

Citrus is well suited, but the groves must be protected from damaging cold. Cover crops between the trees, adequate applications of fertilizer and lime, minimum tillage, and irrigation during droughty periods are required.

Improved pasture of a deep-rooting grass, such as bahiagrass, is moderately well suited. Fertilization, lime, and controlled grazing are needed. Yields are occasionally reduced by extended dry periods. Shallow-rooting legumes and grasses are not suited.

### CAPABILITY UNIT IVs-3

Sparr fine sand, 5 to 8 percent slopes, the only soil in this unit, is a sloping, somewhat poorly drained soil with a loamy and clayey subsoil below a depth of 40 inches. It occurs as small areas on seepy hillsides in the uplands.

Natural fertility and organic-matter content are low. Water and plant nutrients move freely through the porous sandy layers. Permeability is rapid in the sandy layers and moderate in the subsoil. Available water capacity is low in the sandy layers and medium or high in the subsoil.

The water table fluctuates between 30 and 60 inches for 1 month to 4 months during most years. It commonly affects the soil favorably, but is within 30 inches of the surface for only brief periods. Erosion and soil blowing are active in unprotected areas. The management needed to improve the soil is also generally adequate to control erosion.

This soil is moderately well suited to most crops grown in the area. Irrigation of high-value crops is needed during dry periods, when the root zone is droughty. The water table is below 60 inches during these periods. Intensive soil-improving measures are required, including the return of all crop residue to the soil and adequate applications of fertilizer and lime. Cover crops help to control erosion.

Citrus is well suited, but the groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, adequate fertilization, and lime are essential.

Improved pasture is suited. Deep-rooting grasses and legumes grow well if they are properly established, fertilized, limed, and grazed. They are little affected by drought. A shallow-rooting plant, such as white clover, is not suited because the root zone is droughty.

### CAPABILITY UNIT Vw-1

In this unit are nearly level, very poorly drained soils. They are mostly clayey or sandy soils with a clayey subsoil. In a few areas, however, they are sandy throughout or have an organic surface layer over sandy material. They occur mostly along the flood plain of the Oklawaha River, in depressions in the flatwoods, or on grassy prairies in the uplands.

The water table is within 10 inches of the surface for 6 months or more annually. It severely restricts the growth of roots. The soils are subject to flooding or are covered with water for long periods during most years. Surface drainage and internal drainage are slow. Available water capacity is generally medium to high. Permeability is generally moderately rapid to slow in the surface layer and slow to very slow in the subsoil. It is mostly very rapid, however, in the soils that are sandy throughout or have an organic surface layer over sandy material. Natural fertility is medium to high. Organic-matter content is moderately low to high.

These soils have severe limitations and are not suited to cultivated crops or citrus. Even if a good water-control system is established, they are subject to waterlogging during wet periods.

Improved pasture is poorly suited unless water is controlled. If intensively managed, clover-grass pasture can be grown. Rapid removal of surface water is essential. Grazing should be controlled and rotated to permit the growth of healthy plants and to prevent puddling or packing.

### CAPABILITY UNIT VIw-1

In this unit are poorly drained soils on seepy hillsides in the uplands. These are dominantly strongly sloping sandy soils that have a clayey subsoil. Some are sloping gravelly sandy soils that have a clayey or loamy subsoil within a depth of 20 to 40 inches. In the gravelly soils, the sandy layers and at least the upper 20 inches of the subsoil are, by volume, more than 35 percent gravel, pebbles, and rock fragments less than 3 inches in diameter. Rock commonly crops out in places.

Available water capacity is low in the sandy layers of the nongravelly soils and mostly medium to high in the subsoil. It is very low in the sandy layers of the gravelly soils, low to very low in the gravelly part of the subsoil, and medium to high in the nongravelly part. Permeability is rapid to moderately rapid in the sandy layers and ranges from moderate to very slow in the subsoil. Natural fertility and organic-matter content are low to medium.

Wetness is the result of hillside seepage and a slow infiltration rate in the subsoil. The water table is within 10 inches of the surface during wet periods. The hazard of erosion is moderate, and effective erosion control is difficult.

These soils are not suited to cultivated crops or citrus. They should always be protected by permanent close-growing plant cover.

Improved pasture is moderately suited. Many areas have too many rock outcrops and rock fragments for safe mowing. Proper management is needed to produce good quality pasture. Intensive management is needed to control erosion. A good protective plant cover is required at all times. Sod must be established as soon as possible after land preparation.

### CAPABILITY UNIT VIs-1

Astatula sand, 0 to 5 percent slopes, the only soil in this unit, is nearly level to gently sloping, excessively drained, and droughty. It is sand to a depth of more than 80 inches.

Available water capacity is very low. Natural fertility is low. Permeability is very rapid. Water and air move freely through the soil, thus permitting the rapid oxidation of organic matter and the rapid leaching of soluble plant nutrients. Soil blowing is active unless the surface is protected.

This soil is not suited to cultivated crops because it is droughty and has other unfavorable soil properties.

Citrus is suited if the climate is favorable. Minimum tillage and the intensive use of cover crops or soil-improving grasses are needed. Sprinkler irrigation insures the survival of young trees and the productivity of older trees.

Improved pasture is poorly suited. Only a deep-rooting grass, such as bahiagrass, can be grown. Frequent applications of fertilizer and carefully controlled grazing are required.

### CAPABILITY UNIT VIs-2

In this unit are excessively drained soils that are mostly sand to a depth of more than 80 inches and have thin bands of loamy sand within a depth of 60 to 80 inches. Slopes are mostly 5 to 12 percent. In a few areas they are 0 to 2 percent. In these areas 9 to 20 inches of clayey overwash overlies the sand. This overwash is the result of the processing of phosphatic limestone.

Organic-matter content is low where slopes are 5 to 12 percent and medium where they are 0 to 2 percent. Available water capacity is very low in the sand that has no bands of loamy sand, low in the sand that has bands of loamy sand, and high in the clayey overwash. Permeability is very rapid in the sand that has no bands of loamy sand, rapid in the sand that has bands of loamy sand, and slow in the clayey overwash. Air and water move freely through these porous sandy soils, and applied plant nutrients leach very rapidly. Soil blowing is a serious hazard, and the sandy surface must be protected at all times. The hazard of erosion is slight in unprotected areas where slopes are more than 5 percent.

These soils are not suited to cultivated crops because of the poor soil qualities, the slope, and the hazard of erosion.

Citrus is suited, but most groves must be protected from damaging cold. Cover crops between the trees, minimum tillage, adequate amounts of fertilizer and lime, and irrigation during droughty periods are needed.

Improved pasture of a deep-rooting grass, such as bahiagrass, is moderately well suited if it is carefully managed. Proper establishment, careful grazing, and adequate fertilization are required.

### CAPABILITY UNIT VIs-3

Electra sand, 0 to 5 percent slopes, the only soil in this unit, is a nearly level to gently sloping, somewhat poorly drained soil that typically has a weakly cemented sandy layer between depths of 41 and 50 inches and a loamy and clayey subsoil below. It is in the flatwoods and the sandy uplands.

Natural fertility is low. This soil is very porous, very rapidly permeable, and highly leached in the upper sandy layers. The weakly cemented sandy layer is moderately permeable, and the subsoil is moderately slowly permeable. The soil is droughty during dry periods, but the water table rises to within 24 to 40 inches of the surface during wet periods. Available water capacity is low to very low in the upper sandy layers and medium in the weakly cemented sandy layer and the subsoil.

This soil is not suited to cultivated crops even if it is intensively managed. The infertile, droughty layers extend below the normal root zone of most crops.

Citrus is poorly suited. Improved pasture is also poorly suited. Only a deep-rooting, drought-resistant grass, such as bahiagrass, can be grown. Intensive management is needed, including frequent applications of fertilizer and carefully controlled grazing.

### CAPABILITY UNIT VIs-4

Udalfic Arents, 0 to 5 percent slopes, the only soils in this unit, are well drained mixed soil material and unconsolidated material that was originally removed as overburden from surface mines and piled as spoil material. This material has been spread, shaped, or leveled to suit the desired use. Where spread over the surface of adjacent soils, it is about 24 to 48 inches deep. The underlying soil is sandy in the upper layers and loamy or clayey in the lower layers.

Natural fertility is low to medium. Available water capacity varies, but is generally low to medium. Permeability also varies, but is mostly moderate to rapid in the unconsolidated material. It is rapid in the sandy layers below the unconsolidated material. Organic-matter content is commonly low.

Areas of this unit are generally not suited to general farm crops. The soil material is mixed and contains rock fragments in varying numbers. Some areas are used for special crops and are productive under a high level of management.

Citrus is suited, but the groves require good management and protection from damaging cold.

Suitability for improved pasture of deep-rooting grasses and legumes varies. Most areas are moderately well suited. Careful management is needed, including proper establishment, careful grazing, and adequate fertilization.

### CAPABILITY UNIT VIIw-1

Eureka loamy fine sand, ponded, the only soil in this unit, is a nearly level, very poorly drained soil with a clayey subsoil. It is in small depressions in the flatwoods.

The water table is within 10 inches of the surface for 6 months or more annually, and the surface is ponded or covered with water for more than 4 months. Permeability is moderately rapid in the sandy layers and slow to very slow in the subsoil. Available water capacity is medium in the sandy layers and high in the subsoil.

This soil has very severe limitations and is not suited to cultivated crops and citrus. A good water-control system is difficult to establish because most areas lack good water outlets and internal drainage is slow.

Under natural conditions, this soil is not suited to improved pasture. If intensively managed, it is moderately well suited to pasture of improved bahiagrass or grass and white clover. Removal of excess water, fertilization, lime, and controlled grazing are needed.

### CAPABILITY UNIT VIIw-2

Pompano sand, ponded, the only soil in this unit, is a nearly level, very poorly drained soil that is sandy to a depth of more than 80 inches. It is in shallow depressions and sloughs of the flatwoods and on sandy ridges.

This soil is highly porous, and applied plant nutrients leach very rapidly. Available water capacity is very low. Permeability is very rapid. Natural fertility is low, and organic-matter content is very low. Poor soil qualities and wetness severely restrict the use of the soil. The water table is within 10 inches of the surface for more than 6 months annually, and the surface is covered with water for more than 4 months.

This soil is not suited to cultivated crops and citrus. A good water-control system is difficult to establish because most areas lack good outlets.

Improved pasture is not suited unless excess water is removed. If intensively managed, pasture of bahiagrass or grass and white clover is moderately well suited. A large amount of fertilizer and lime and carefully controlled grazing are required.

#### CAPABILITY UNIT VIIs-1

Astatula sand, 5 to 12 percent slopes, the only soil in this unit, is sloping to strongly sloping, excessively drained, and droughty. It is sand to a depth of more than 80 inches.

This soil is highly porous. Natural fertility is low. Available water capacity is very low, and very little water is retained in the root zone. Permeability is very rapid. Soil blowing is active unless the surface is protected.

This sandy soil has very severe limitations and is too infertile and too droughty for cultivated crops and citrus. Improved pasture is impractical. If the soil is used for homesites, the lawns and ornamental shrubs require irrigation and a large amount of fertilizer and mulch.

#### CAPABILITY UNIT VIIIs-1

In this unit are large areas where soil material has been removed and used in road construction and as fill material in preparing building sites. Also in this unit are large areas where the soil material is mixed and slopes are 15 to 60 percent. This material was excavated during surface mining and piled adjacent to the mines.

Crops and pasture are not suited. Many areas are bare. In some older areas, a few trees have reseeded naturally and other plants have become established. All areas have limited use as wildlife habitat.

### *Estimated yields*

Table 4 lists the estimated average yields per acre of the principal crops grown in the survey area. The yields are those expected under a generally high level of management. In areas used for crops and groves, this management includes applying adequate amounts of fertilizer and lime, controlling insects, managing crop residue, supplying drainage or water control, controlling runoff and erosion, and installing irrigation systems. Management in areas used for improved pasture includes adequate applications of fertilizer and lime, controlled grazing, pasture rotation, selection of forage varieties best suited to the soil, control of undesirable plants, drainage to remove excess surface water, and, if feasible, irrigation.

The yields in table 4 are based largely on the observations of farmers, soil scientists, conservationists, and Extension agents; the findings of the University of Florida Agricultural Experiment Stations; comparisons of yields on similar soils in other counties in central Florida; and records of crop yields kept by the Florida Crop Reporting Service. The estimates assume optimum weather conditions.

Borrow pits; Udalfic Arents, 15 to 60 percent slopes; the Urban land complexes; and Urban land are not listed in table 4 because they are not used for crops and pasture. Yields for all crops and pasture plants but bahiagrass cannot be accurately estimated for Udalfic Arents, 0 to 5 percent slopes, because the soil material is too variable.

## Woodland

This section provides information about the use of soils for trees. It can help woodland owners and operators to better understand the capabilities of soils to produce trees and can assist them in planning maximum productivity.

Forestry has been of major importance in the development of the survey area. The progress of the wood industry parallelled the growth of the area. Before early settlement the survey area was covered by vast virgin forests. After settlement large areas were cleared. The wooded acreage has constantly decreased. Overcutting, wildfire, and land clearing have reduced this acreage to only about 286,000 acres.

Forestry is still important in the economic development of the area. There are six sawmills, eight pulpwood dealers, eight sawtimber dealers, two pole dealers, one veneer mill, and one miscellaneous mill.

The chief commercial tree species are slash pine, loblolly pine, and longleaf pine. Slash pine is about 40 percent of the species in wooded areas; loblolly pine, 40 percent; and longleaf pine, 10 percent.

About 257,000 acres is under forest management. About 72,000 acres is planted to pine. Major problems in management are eliminating cull and weed trees and planting and seeding commercial species or encouraging the natural regeneration of these species.

Soils differ greatly in their suitability for trees. The combinations of species, or forest types, that grow on a soil are determined mainly by the physical qualities of the soil and the climate. Among the most important factors that affect the productive capacity of the soil for growing trees is the capacity of the soil to supply moisture and permit the development of an adequate root system. Other significant characteristics that affect the site are the thickness of the surface layer and its content of organic matter, which are most important during the growth of the roots of seedlings; the natural supply of plant nutrients; the texture and consistence of the soil material; the aeration; the internal drainage; and the depth to the water table.

### *Woodland grouping*

In table 5 most of the soils of the Marion County Area are assigned to 11 woodland groups. Woodland grouping provides owners of woodland with an understanding of the use of soils for trees and assists them in planning. Ratings in table 5 are mostly for pine. Some soils, however, are also suited to hardwoods. Foresters should be consulted in planning extensive

## TABLE 4.—YIELDS PER ACRE OF CROPS AND PASTURE

[All yields were estimated for a high level of management in 1974. Absence of a yield figure indicates that the crop is seldom grown or is not suited]

| Soil name and map symbol | Oranges | Grapefruit | Corn | Peanuts | Watermelons | Tomatoes | Grass-clover | Bahiagrass |
|---|---|---|---|---|---|---|---|---|
| | *Box* | *Box* | *Bu* | *Lb* | *Ton* | *Ton* | *AUM*[1] | *AUM*[1] |
| Adamsville: | | | | | | | | |
| AdB | 375 | 500 | --- | --- | 10 | 7 | --- | 7 |
| Anclote; | | | | | | | | |
| Ae | --- | --- | --- | --- | --- | 6 | 13 | 10 |
| [2]AN | | | | | | | | |
| Anclote part | --- | --- | --- | --- | --- | 6 | 13 | 10 |
| Tomoka part | --- | --- | --- | --- | --- | --- | 32 | --- |
| Apopka: | | | | | | | | |
| ApB, ApC | 500 | 700 | --- | --- | 18 | --- | --- | 7 |
| Arredondo: | | | | | | | | |
| ArB | 450 | 650 | --- | 2,200 | 10 | --- | --- | 7 |
| ArC | 450 | 650 | --- | 2,100 | 9.5 | --- | --- | 7 |
| Astatula: | | | | | | | | |
| AtB | 350 | 400 | --- | --- | 10 | --- | --- | 3.5 |
| AtC | --- | --- | --- | --- | --- | --- | --- | --- |
| Blichton: | | | | | | | | |
| BcA, BcB | 400 | 600 | 50 | 2,200 | 9 | --- | 12 | 9 |
| Bluff: | | | | | | | | |
| Bf | --- | --- | --- | --- | --- | --- | 12 | 9 |
| Boardman: | | | | | | | | |
| BoC | --- | --- | --- | --- | 9 | 7 | 12 | 9 |
| BoD | --- | --- | --- | --- | --- | --- | 12 | 9 |
| Borrow pits: | | | | | | | | |
| Bp. | | | | | | | | |
| Candler: | | | | | | | | |
| CaB | 425 | 625 | 35 | 1,700 | 10 | --- | --- | 4.5 |
| CaC | 400 | 600 | --- | --- | --- | --- | --- | 4.5 |
| CwA | --- | --- | --- | --- | --- | --- | --- | 5.5 |
| Eaton: | | | | | | | | |
| Ea | --- | --- | --- | --- | --- | 9 | 12 | 10 |
| Electra: | | | | | | | | |
| EcB | --- | --- | --- | --- | --- | --- | --- | 6 |
| Eureka: | | | | | | | | |
| Er | --- | --- | 80 | --- | --- | --- | 12 | 9 |
| Es | --- | --- | --- | --- | --- | --- | 12 | 9 |
| Fellowship: | | | | | | | | |
| FeB | --- | --- | --- | --- | --- | 8.5 | 12 | 9 |
| FeC | --- | --- | --- | --- | --- | 8 | 11 | 9 |
| Fellowship variant: | | | | | | | | |
| FgB | --- | --- | --- | --- | 8 | 6 | 10 | 8 |
| FgC | --- | --- | --- | --- | --- | --- | 10 | 8 |
| Flemington: | | | | | | | | |
| FmA, FmB | --- | --- | --- | --- | 8 | 7.5 | 12 | 9 |
| Gainesville: | | | | | | | | |
| GaB | 500 | 700 | 60 | 2,800 | 10 | --- | --- | 7.5 |
| GaC | 500 | 700 | 55 | 2,300 | 9.5 | --- | --- | 7.5 |
| Hague: | | | | | | | | |
| HaB | 525 | 725 | 60 | 3,000 | 11.5 | --- | --- | 7.5 |
| HaC | 525 | 725 | 55 | 2,800 | 11 | --- | --- | 7.5 |
| Holopaw: | | | | | | | | |
| Ho | --- | --- | --- | --- | --- | 7 | 12 | 8 |
| Jumper: | | | | | | | | |
| JuB | 450 | 650 | 55 | 2,100 | 10 | 8.5 | --- | 7.5 |

TABLE 4.—YIELDS PER ACRE OF CROPS AND PASTURE—Continued

| Soil name and map symbol | Oranges | Grapefruit | Corn | Peanuts | Watermelons | Tomatoes | Grass-clover | Bahiagrass |
|---|---|---|---|---|---|---|---|---|
| | *Box* | *Box* | *Bu* | *Lb* | *Ton* | *Ton* | *AUM* [1] | *AUM* [1] |
| Kanapaha: | | | | | | | | |
| KaB | 475 | 675 | 55 | --- | 9.5 | 8.5 | 11 | 8 |
| Kendrick: | | | | | | | | |
| KeA | 525 | 725 | 60 | 2,800 | --- | 10 | --- | 7.5 |
| KeB | 525 | 725 | 60 | 2,800 | --- | 10 | --- | 7.5 |
| KeC | 525 | 725 | 55 | 2,700 | --- | 9 | --- | 7.5 |
| Lochloosa: | | | | | | | | |
| LoA, LoB | 475 | 675 | 60 | 2,700 | 11 | 10.0 | --- | 7 |
| LoC | 475 | 675 | 55 | 2,600 | 11 | 9.5 | --- | 7 |
| Lynne: | | | | | | | | |
| Ly | --- | --- | --- | --- | 10 | --- | 12 | 8 |
| Martel: | | | | | | | | |
| Ma | --- | --- | --- | --- | --- | --- | 12 | 9 |
| Micanopy: | | | | | | | | |
| McB | 475 | 675 | 70 | 2,800 | 11 | 9 | --- | 8 |
| McC | 475 | 675 | 50 | 2,600 | 10.5 | 8.5 | --- | 8 |
| Okeechobee: | | | | | | | | |
| Ok | --- | --- | --- | --- | --- | --- | --- | 15 |
| Paisley: | | | | | | | | |
| Pa | --- | --- | --- | --- | --- | --- | 12 | 9 |
| Pamlico: | | | | | | | | |
| [2] PB: | | | | | | | | |
| Pamlico part | --- | --- | --- | --- | --- | --- | --- | 14 |
| Martel variant part | --- | --- | --- | --- | --- | --- | 12 | 9 |
| Pedro: | | | | | | | | |
| [2] PeB | --- | --- | --- | 2,000 | 10 | --- | --- | 5.0 |
| Placid: | | | | | | | | |
| Pm | --- | --- | --- | --- | --- | 6 | 13 | 10 |
| [2] Pn | --- | --- | --- | --- | --- | 6 | 13 | 10 |
| Pomona: | | | | | | | | |
| Po | --- | --- | --- | --- | 9.5 | 9 | 12 | 8 |
| Pompano: | | | | | | | | |
| Pp | --- | --- | --- | --- | --- | 9 | 12 | 8 |
| Pr | | | | | --- | --- | 12 | 8 |
| Sparr: | | | | | | | | |
| SpB | 415 | 615 | 50 | 2,300 | 10 | 9 | --- | 7 |
| SpC | 415 | 615 | 50 | 2,200 | 9.5 | 8.5 | --- | 7 |
| Tavares: | | | | | | | | |
| TaB | 425 | 600 | --- | --- | 8 | --- | --- | 5.5 |
| Terra Ceia: | | | | | | | | |
| Tc | --- | --- | --- | --- | --- | --- | --- | 15 |
| Terra Ceia variant: | | | | | | | | |
| Te | --- | --- | --- | --- | --- | --- | --- | 15 |
| Tomoka: | | | | | | | | |
| To | --- | --- | --- | --- | --- | --- | --- | 15 |
| Udalfic Arents: | | | | | | | | |
| UaA | --- | --- | --- | --- | --- | --- | --- | 4 |
| Wacahoota: | | | | | | | | |
| WaC | 475 | 675 | 40 | 2,000 | 9 | --- | 12 | 9 |
| Wacahoota variant: | | | | | | | | |
| WgB | 475 | 675 | --- | --- | 8 | 6 | 11 | 8 |
| WgC | --- | --- | --- | --- | --- | --- | 11 | 8 |
| Zuber: | | | | | | | | |
| ZuA | 525 | 725 | 70 | 2,800 | --- | 10 | --- | 7.5 |
| ZuB | 525 | 725 | 70 | 2,800 | --- | 10 | --- | 7.5 |
| ZuC | 475 | 675 | 50 | 2,300 | --- | 8 | --- | 7.5 |

[1] Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for a period of 30 days.

[2] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

management for hardwoods. A woodland group is made up of soils that have about the same suitability for wood crops, that need similar management to produce these crops, and that have about the same potential productivity.

Table 5 shows, for each group, ratings for potential productivity, limitations, and degree of hazard for woodland use. It also lists preferred species in existing stands and for planting. The ratings are based largely upon the experience and judgment of local soil scientists, foresters, and landowners.

Each woodland group designation has three elements. The first element, a numeral from 1 to 5, indicates potential productivity. The numeral 1 indicates the highest potential productivity. Potential productivity is based on the average *site index* of the indicator species. In this survey area it is based on old tracts of planted slash pine. The site index for a given kind of soil is the height, in feet, that a specified kind of tree will reach in 50 years. In table 5 it is an average for all the soils in a woodland group. Therefore the site index for any one soil in a group may be slightly more or slightly less than average.

The second element is a lowercase letter. It expresses soil properties that cause moderate to severe hazards or limitations in woodland use or management. The letters used in this survey are *w*, *s*, and *o*.

The letter *w* indicates soils in which excessive water, either seasonally or year round, causes significant limitations for woodland use or management. These soils have restricted drainage, a high water table, or an overflow hazard that adversely affects either stand development or management.

The letter *s* indicates sandy soils having little or no accumulated clay in the subsoil and moderate to severe restrictions or limitations for woodland use or management. These soils generally have a low capacity to hold moisture and are low in available plant nutrients.

The letter *o* indicates soils having no significant restrictions or limitations for woodland use or management.

The third element of the woodland group designation, another numeral, indicates groups of soils that are capable of producing similar kinds of wood crops and that need similar management to produce these crops if the existing plant cover is similar. The soils in each of these groups have about the same potential productivity.

Ratings in table 5 for equipment limitations, plant competition, and seedling mortality are explained in the following paragraphs.

*Equipment limitation.*—Drainage, flooding, soil texture, or other soil characteristics can restrict or prohibit the use of equipment in woodland management. Ratings reflect limitations in the use of equipment for managing the tree crop. A rating of *slight* indicates that use is seldom limited in kind or time of year. *Moderate* indicates a need for modified equipment or seasonal restrictions that are the result of wetness or coarse texture. *Severe* indicates the need for specialized equipment.

*Plant competition.*—If woodland is disturbed by fire, cutting, grazing, or some other means, undesirable brush, trees, and plants can invade. The invading growth competes with the desirable trees and hinders their establishment and growth. Competition is *slight* if unwanted plants present no special problem. It is *moderate* if the invaders delay but do not prevent the establishment of a normal, fully stocked stand. Simple methods can generally prevent undesirable plants from invading. Competition is *severe* if trees cannot regenerate naturally. The site should be carefully prepared and managed.

*Seedling mortality.*—Even if healthy seedlings are planted or occur naturally in adequate numbers, some will not survive if characteristics of the soil are unfavorable. Mortality is *slight* if less than 25 percent of the seedlings die during the first 2 years after establishment or if trees ordinarily regenerate naturally in places where there are enough seeds. It is *moderate* if 25 to 50 percent of the seedlings die or if trees do not regenerate naturally in numbers adequate for restocking. In places replanting to fill open spaces is necessary. Mortality is *severe* if more than 50 percent of the planted seedlings die or if trees do not ordinarily reseed naturally in places where there are enough seeds. Special methods of planting should be used, including special site preparation, to insure a good stand of trees.

Some soils in this survey area are not assigned to woodland groups. Anclote-Tomoka association; Okeechobee muck; Pamlico-Martel association; Terra Ceia muck, acid variant; and Tomoka muck are very poorly drained and are covered with water during much of the year. They are unsuited to pine trees, mainly because of excessive wetness. Borrow pits are areas where the upper 5 to 12 feet of soil material has been removed and used in road construction or as fill material. The rest of the soil material is too variable to rate for tree production. Udalfic Arents, 0 to 5 percent slopes, and Udalfic Arents, 15 to 60 percent slopes, are also too highly variable to rate for trees. Urban land and the Urban land complexes cannot be used for commercial production of pine trees.

The paragraphs that follow describe the woodland groups listed in table 5.

### WOODLAND GROUP 1w1

In this group are poorly drained, nearly level sandy soils that have a clayey subsoil. They are in low, broad areas of the flatwoods.

Potential productivity for pine is excellent. Natural fertility is medium, and organic-matter content is moderately low.

Wetness and the slowly permeable clayey subsoil severely restrict the use of equipment. The soils become compact under heavy traffic. The high water table restricts root growth of young trees to some extent. Natural fertility and the content of organic matter, however, help in ensuring good growth after trees are established.

### WOODLAND GROUP 2o1

In this group are well drained to somewhat poorly drained, nearly level to sloping soils of the uplands.

## TABLE 5.—WOODLAND GROUPS

| Woodland group and map symbols | Potential productivity | | Management | | | Preferred species— | |
|---|---|---|---|---|---|---|---|
| | Species | Site index | Equipment limitation | Plant competition | Seedling mortality | In existing stands | For planting |
| Group 1w1:<br>Pa. | Slash pine | 100 | Severe | Severe | Severe | Slash pine, loblolly pine. | Slash pine. |
| | Loblolly pine. | 100 | | | | | |
| | Longleaf pine. | 80 | | | | | |
| Group 2o1:<br>HaB, HaC, KeA, KeB, KeC, LoA, LoB, LoC, McB, McC, ZuA, ZuB, ZuC. | Slash pine | 90 | Slight | Slight | Slight | Slash pine, loblolly pine. | Slash pine, loblolly pine. |
| | Loblolly pine. | 90 | | | | | |
| | Longleaf pine. | 75 | | | | | |
| Group 2w1:<br>BcA, BcB, BoC, BoD, FeB, FeC, FgB, FgC, FmA, FmB, WaC, WgB, WgC. | Slash pine | 90 | Moderate | Moderate | Slight | Slash pine, loblolly pine. | Slash pine, loblolly pine. |
| | Loblolly pine. | 90 | | | | | |
| | Longleaf pine. | 80 | | | | | |
| Group 2w2:<br>Ea, Er. | Slash pine | 90 | Severe | Moderate | Moderate | Slash pine, loblolly pine. | Slash pine. |
| | Loblolly pine. | 90 | | | | | |
| | Longleaf pine. | 80 | | | | | |
| Group 2w3:<br>Ae, Bf, Es, Ma. | Slash pine [1] | 90 | Severe | Moderate | Severe | Slash pine, loblolly pine. | Slash pine.[2] |
| | Loblolly pine [1]. | 90 | | | | | |
| | Water oak | 95 | | | | | |
| | Tupelo-gum. | 95 | | | | | |
| | Pond pine | 90 | | | | | |
| Group 3s1:<br>ApB, ApC, ArB, ArC, GaB, GaC, PeB, SpB, SpC, TaB. | Slash pine | 80 | Moderate | Moderate | Moderate | Slash pine, longleaf pine. | Slash pine. |
| | Loblolly pine. | 80 | | | | | |
| | Longleaf pine. | 70 | | | | | |
| Group 3w1:<br>AdB, JuB, KaB, Ly, Po. | Slash pine | 80 | Moderate | Moderate | Moderate | Slash pine, longleaf pine. | Slash pine. |
| | Loblolly pine. | 80 | | | | | |
| | Longleaf pine. | 70 | | | | | |
| Group 3w2:<br>Ho. | Slash pine | 80 | Severe | Moderate | Severe | Slash pine, loblolly pine. | Slash pine. |
| | Loblolly pine. | 80 | | | | | |
| Group 4s1:<br>CaB, CaC, CwA, EcB. | Slash pine | 70 | Moderate | Moderate | Moderate | Slash pine, longleaf pine. | Slash pine. |
| | Sand pine | 75 | | | | | |
| | Longleaf pine. | 60 | | | | | |
| Group 4w1:<br>Pm, Pn, Pp, Pr. | Slash pine [1] | 70 | Severe | Severe | Severe | Slash pine, longleaf pine. | Slash pine.[2] |
| | Longleaf pine. | 60 | | | | | |
| Group 5s1:<br>AtB, AtC. | Sand pine | 60 | Severe | Severe | Severe | Sand pine | Sand pine. |

[1] Potential productivity is attainable only in areas where surface drainage is adequate.

[2] Planting is feasible only in areas where surface drainage is adequate.

They are sandy soils that have a loamy or clayey subsoil within a depth of 20 or 20 to 40 inches.

Potential productivity for pine is good. Organic-matter content is low. Natural fertility is low in the sandy layers and medium in the subsoil.

Limitations are only slight. Internal drainage in the somewhat poorly drained soils does not prevent good root growth and is not a problem in management. The erosion hazard is moderate to severe in unprotected areas where the slope is more than 2 percent.

### WOODLAND GROUP 2w1

In this group are poorly drained, nearly level to strongly sloping soils of the uplands. They are sandy or gravelly sandy soils that have a clayey or loamy subsoil. The gravelly sandy soils are gravelly in the upper part of the subsoil. In some soils of this group the subsoil is within a depth of 20 to 40 inches.

Potential productivity for pine is good. Organic-matter content and natural fertility are low to medium.

Limitations are commonly only slight to moderate. Wetness is the chief limitation. On slopes it is caused by hillside seepage. During excessively wet periods, some nearly level areas are covered with water. Runoff is rapid from adjacent sloping areas, and drainage outlets are lacking. Erosion is a hazard on unprotected slopes. Seedling mortality is only slight.

### WOODLAND GROUP 2w2

In this group are poorly drained, nearly level soils of the flatwoods. They are sandy soils that have a clayey subsoil within a depth of 20 or 20 to 40 inches.

Potential productivity for pine is good. Natural fertility is medium, and organic-matter content is moderately low or low.

Wetness is a limitation. The natural fertility and the organic-matter content help in ensuring that planting or seeding result in only moderate seedling mortality and plant competition.

### WOODLAND GROUP 2w3

In this group are very poorly drained, nearly level soils in ponds and depressions and on flood plains. They are mostly sandy soils that have a clayey subsoil. Some are sandy throughout.

Potential productivity for pine is moderate to poor unless the soils are drained. Under natural conditions, most areas are covered with mixed pine and hardwoods. Natural fertility is high or medium. Organic-matter content is mostly high, but in some soils is moderately low.

Excessive wetness is the chief limitation. Most areas are covered with water or flooded for 4 months or more during most years. Water control is needed to insure normal pine growth. Removal of excess surface water is essential. Equipment limitations and seedling mortality are severe unless water is controlled. Plant competition is moderate. If the soil is well managed, the site index is high because of the organic-matter content and the natural fertility.

### WOODLAND GROUP 3s1

In this group are well drained to somewhat poorly drained, nearly level to sloping soils of the uplands and the flatwoods. Some are sandy throughout. Others are sandy and have a loamy or clayey subsoil below a depth of 40 inches. A few are shallow over limestone.

Potential productivity for pine is moderately good. Organic-matter content is low. Natural fertility is mostly low, but is medium in the loamy or clayey subsoil. Plant nutrients leach rapidly through the sandy layers.

The loose sandy surface layer somewhat restricts the use of equipment, especially during dry periods. Seedling mortality is only slight in areas where sufficient moisture is available when seedlings are planted and roots are established. In these areas the site index for all species of pine is generally about 5 feet above the average for this group.

### WOODLAND GROUP 3w1

In this group are poorly drained and somewhat poorly drained, nearly level sandy soils of the broad flatwoods. They have a weakly cemented layer over a clayey subsoil, are sandy throughout, have a loamy subsoil within a depth of 20 to 40 inches, or have a loamy and clayey subsoil below a depth of 40 inches.

Potential productivity for pine is moderately good. Organic-matter content is low. Natural fertility in the sandy layers is low. The loose, porous sandy layers are leached of most plant nutrients. The soils are affected by a high water table that is near the surface during wet periods but recedes below the surface during dry periods. The sandy layers above the water table are somewhat droughty during dry periods.

The water table does not severely restrict the use of equipment during most of the year or result in severe seedling mortality. Plant competition is moderate during most years. For the soils that have a loamy subsoil within 20 to 40 inches of the surface, the site index for slash pine is about 5 feet above the average for this group.

### WOODLAND GROUP 3w2

In this group are poorly drained, nearly level soils of low-lying flats and shallow depressions in the flatwoods. They are sandy soils that have a loamy subsoil below a depth of 40 inches.

Potential productivity for pine is moderately good. Organic-matter content and natural fertility are low. Surface drainage is slow as a result of a high water table, and many areas are briefly covered with water during wet periods.

Excessive wetness severely restricts the use of equipment during wet periods. It also severely limits the survival pine seedlings and the growth of roots. Good water control is needed to insure good growth.

### WOODLAND GROUP 4s1

In this group are chiefly excessively drained, nearly level to strongly sloping soils of the sandy uplands. They mostly are sand to a depth of 80 inches or more and have thin bands of loamy sand within a depth of 60 to 80 inches. Some excessively drained soils have 10 to 20 inches of clayey overwash on the surface. Also in this group are somewhat poorly drained, nearly level to gently sloping sandy soils that have a weakly cemented sandy layer within a depth of 30 to 50 inches and a loamy and clayey subsoil.

Potential productivity for pine is poor. The soils are droughty and are leached of most plant nutrients. Even in the somewhat poorly drained soils, the sandy layers above the water table are droughty. Natural fertility is low. Organic-matter content is very low.

The loose sandy surface layer moderately restricts the use of equipment. Seedling mortality is mostly only moderate, especially in areas where seedlings are planted and the site is prepared. Natural regeneration is inadequate in many areas.

### WOODLAND GROUP 4w1

In this group are poorly drained and very poorly drained soils on the broad flats and in the depressions and sloughs of flatwoods and in the depressions in sandy ridges. They are mostly sandy throughout, but in a few areas have a weakly cemented sandy layer that is underlain by a loamy and clayey subsoil.

Potential productivity for pine is poor. Organic-matter content and natural fertility are high in some of the very poorly drained soils, but are low in the other soils.

Limitations are severe. Excessive wetness is the chief limitation. Many areas are covered with water for more than 4 months annually. Water control is needed to insure normal pine growth. Removal of excess surface water is essential.

### WOODLAND GROUP 5s1

In this group are excessively drained, droughty, nearly level to strongly sloping soils of the sandy uplands. They are sand to a depth of more than 80 inches.

Potential productivity for pine is poor. The soils are unsuited to slash pine and longleaf pine. They are better suited to sand pine than to any other species of pine. Organic-matter content is very low. Natural fertility is low, and the soils are leached of most plant nutrients.

Droughtiness and severe plant competition for the very limited amount of available water make seedling mortality severe. Equipment limitations are severe because of the loose sandy surface layer. Good site preparation is essential.

## Wildlife

The soils of the Marion County Area provide food and cover for many kinds of wildlife. The principal game species are bobwhite quail, doves, deer, gray squirrels, fox squirrels, wild turkeys, and wild hogs (fig. 7). There are also foxes, raccoons, and rabbits and many kinds of nongame animals and birds.

Quail, doves, squirrels, and rabbits are abundant throughout the survey area. Deer, wild turkeys, and wild hogs find suitable habitat in wooded areas along the Oklawaha and Withlacoochee Rivers and in large wooded tracts.

The Oklawaha River along the eastern boundary of the survey area, the Withlacoochee River along the southwestern boundary, Lake Weir, a large lake of 5,450 acres in the southeastern part, and Orange Lake along the northern boundary provide excellent fishing for largemouth bass, shellcrackers, catfish, bluegill bream, and crappie. A number of small farm ponds stocked with bream and bass are a source of good fishing (fig. 8).

Successful management of wildlife on any tract of land requires, among other things, that food, cover, and water be available in a suitable combination. Lack of any one of these requirements, an unfavorable balance, or inadequate distribution can severely limit the number or account for the lack of desired wildlife species. Information about the soil is valuable in creating, improving, or maintaining suitable habitat for wildlife.

Most wildlife habitat is created, improved, or maintained by planting suitable plant cover, by manipulating existing plant cover to increase or improve desired plants, or by a combination of these measures. In addition, water areas are created and natural ones improved. The influence of soil on the growth of many plants is known. For other plants it can be inferred from the characteristics and behavior of the soil.

Soil interpretations for wildlife habitat aid in selecting the more suitable sites for various kinds of habitat management. They indicate the level of management needed to achieve satisfactory results. They show why it is not feasible to manage a particular area for a given kind of wildlife. They also serve in broad scale planning of wildlife habitat.

In table 6 the soils are rated according to their suitability for seven wildlife habitat elements and three kinds of wildlife. The present land use, the relationship of soils to adjoining areas, and the movement of wildlife are not considered in the ratings. Also, the size, shape, and location of the habitat does not affect the rating. Certain influences on habitat must be appraised at the site.

Suitability in table 6 is expressed as *good, fair, poor,* and *very poor. Good* means that habitat is easily improved, maintained, or created. Few or no soil limitations affect management, and satisfactory results can be expected. *Fair* means that habitat can be improved, maintained, or created, but moderate soil limitations affect management. A moderate intensity of management and fairly frequent attention may be required for satisfactory results. *Poor* means that habitat can be improved, maintained, or created, but soil limitations are severe. Management may be difficult and expensive and require intensive effort. Results are questionable. *Very poor* means that under the prevailing soil conditions it is impractical to improve, maintain, or create habitat. Unsatisfactory results are probable.

The seven wildlife habitat elements in table 6 are defined in the following paragraphs.

*Grain and seed crops* are domestic and seed-producing annuals planted to produce food for wildlife. Examples are corn, oats, millet, cowpeas, rye, sorghum, and soybeans.

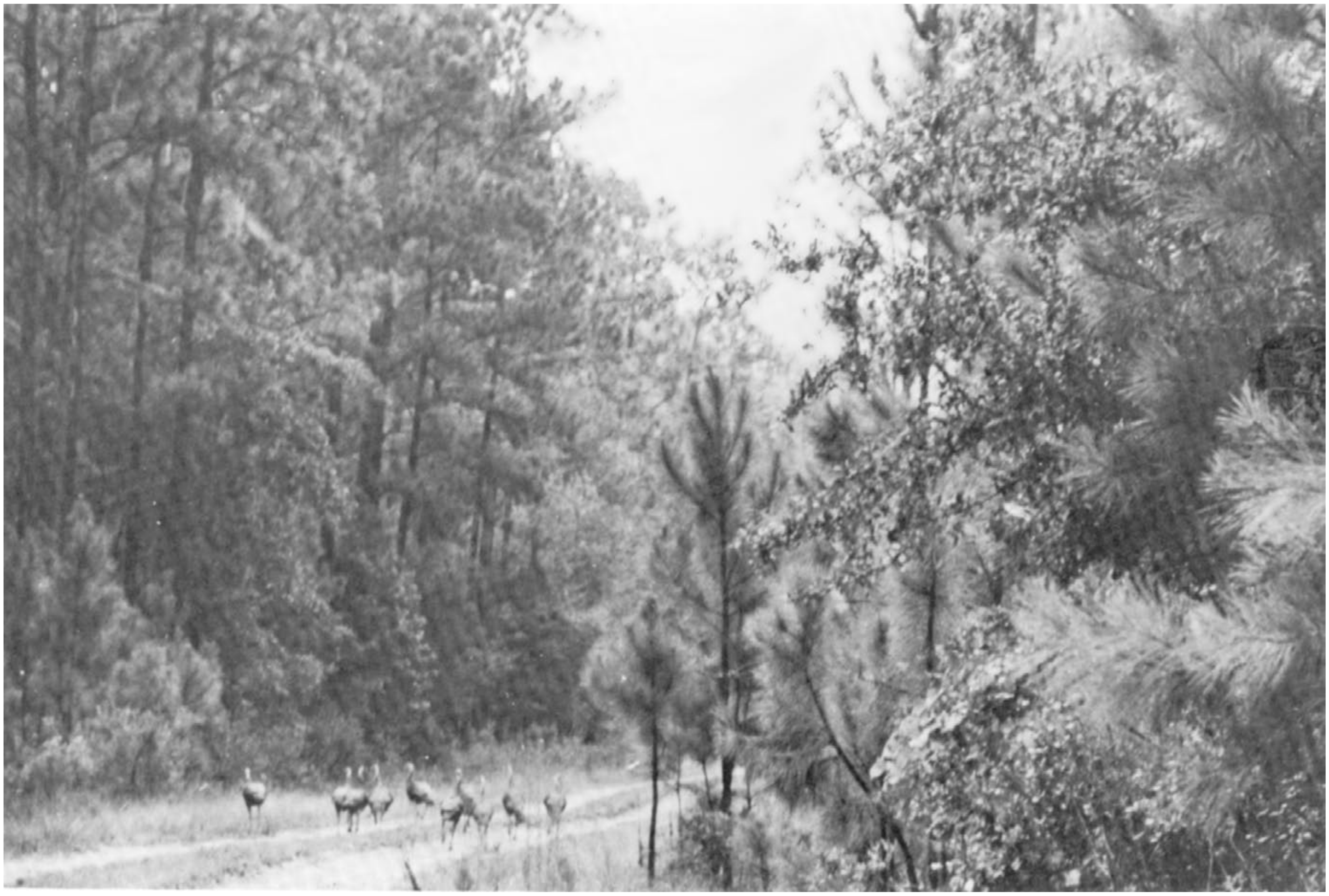

*Figure 7.*—Wild turkeys on Eureka loamy fine sand. The natural vegetation of this soil furnishes good cover and food for many kinds of wildlife.

*Grasses and legumes* are domestic perennial grasses and herbaceous legumes planted for wildlife cover and food. Examples are bahiagrass, pangolagrass, combine peas, white clover, lespedeza, and hairy indigo.

*Wild herbaceous plants* are native or naturally established herbaceous grasses and forbs, including weeds, that provide food and cover for wildlife. These plants are mainly established naturally. Examples are beggarweed, partridgepea, pokeweed, carpetgrass, gallberry, ragweed, lespedeza, American jointvetch, and deervetch.

*Hardwood trees* are nonconiferous trees and associated woody understory plants that provide wildlife cover or nuts, buds, catkins, twigs, bark, and foliage used as food. Examples are oak, hickory, maple, sweetgum, dogwood, cabbage palm, blueberry, briers, grape, and honeysuckle.

*Coniferous plants* are cone-bearing trees, shrubs, and ground cover that furnish wildlife cover or food in the form of browse, seeds, or fruitlike cones. They are commonly established naturally, but can be planted. Examples are pine and cedar.

*Wetland plants* are annual and perennial wild herbaceous plants, excluding submerged or floating aquatics, on moist to wet sites. They provide food or cover used extensively by wetland wildlife. Examples are cattail, cutgrass, wild millet, smartweed, sedges, and rushes.

*Shallow water areas* are areas of surface water used by wildlife. They average less than 5 feet deep. They are naturally wet areas or those created by dams, dikes, or levees used for controlling water in marshy areas. In places they are designed so that they can be drained or flooded.

The three general kinds of wildlife rated in table 6 are described in the following paragraphs.

*Openland wildlife* are birds and mammals that normally frequent crop fields, pastures, groves, lawns, and areas overgrown with grass, herbs, shrubs, and vines. Examples are quail, doves, cottontail rabbits, meadowlarks, and field sparrows.

*Woodland wildlife* are birds and mammals that normally frequent wooded areas of hardwood trees or coniferous trees and shrubs, or both. Examples are deer, wild turkeys, squirrels, raccoons, and woodpeckers.

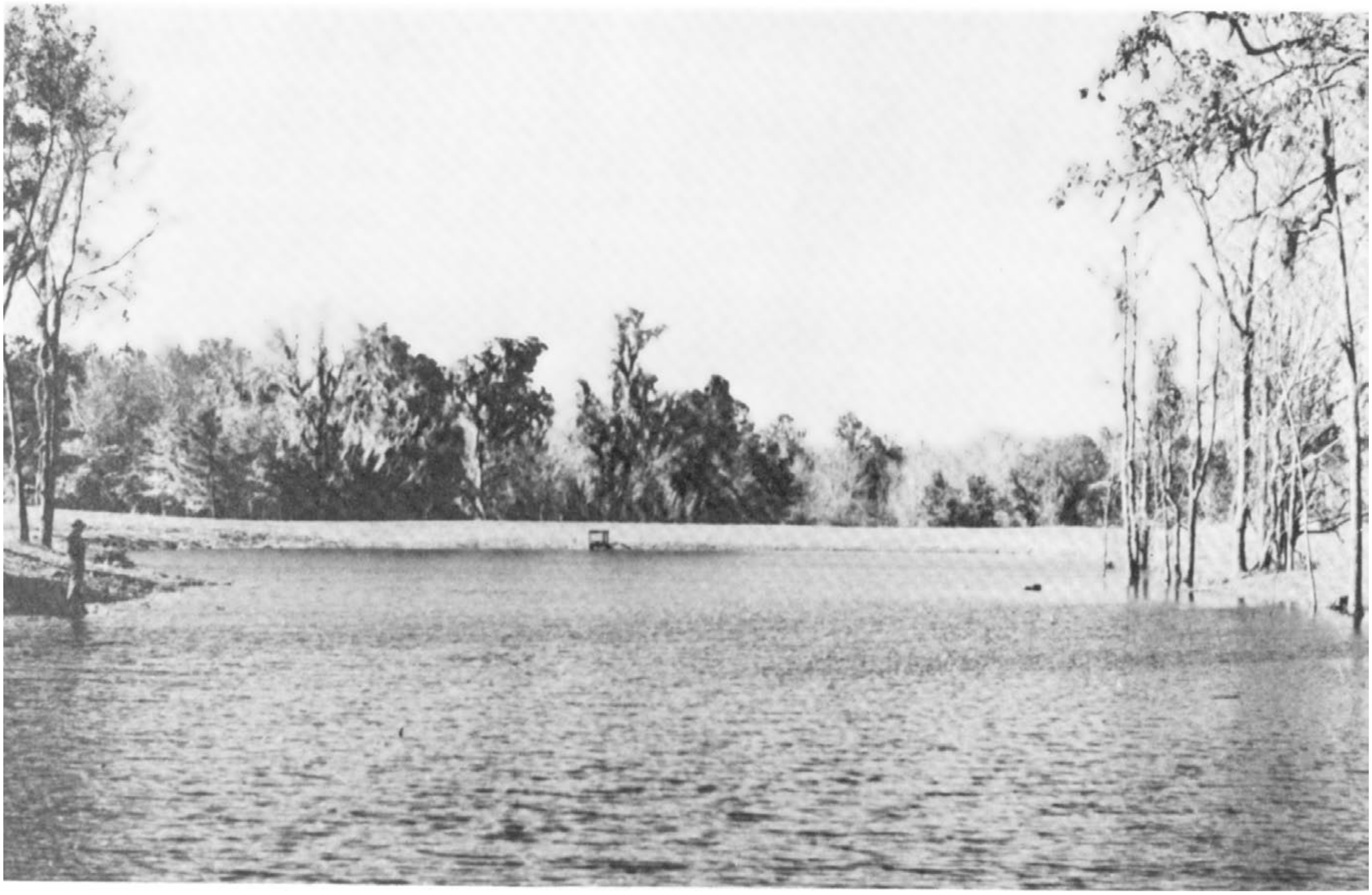

***Figure 8.*****—Farm pond in Blichton soil. Farm ponds provide fishing and are a source of water for livestock and supplemental irrigation.**

*Wetland wildlife* are birds and mammals that normally frequent wet areas, such as ponds, ditches, marshes, and swamps. Examples are ducks, geese, shore birds, herons, and otter.

## Engineering[3]

This section is useful to those who need information about soils used as structural material or as foundation upon which structures are built. Among those who can benefit from this section are planning commissions, town and city managers, land developers, engineers, contractors, and farmers.

Among properties of soils highly important in engineering are permeability, strength, compaction characteristics, soil drainage condition, shrink-swell potential, grain size, plasticity, and soil reaction. Also important are depth to the water table, depth to bedrock, and soil slope. These properties, in various degrees and combinations, affect construction and maintenance of roads, airports, pipelines, foundations for small buildings, irrigation systems, ponds and small dams, and systems for disposal of sewage and refuse.

Information in this section, along with the soil map, can be used to—

1. Make preliminary evaluations of soils in selecting locations for highways, airports, pipelines, cables, and buildings and in planning more detailed investigations at the selected location.
2. Make soil and land-use studies that will aid in selecting and developing industrial, commercial, residential, and recreational sites.
3. Seek sources of sand, topsoil, and other construction material.
4. Plan farm drainage systems, irrigation systems, ponds, terraces, and other structures for controlling water and conserving soil.
5. Correlate performance of engineering structures with soil mapping units and develop information that will be useful in planning, designing, and maintaining these structures.
6. Determine the suitability of soils for cross-country movement of vehicles and construction equipment.
7. Develop preliminary estimates pertinent to construction in a particular area.

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[3] BISHOP C. BEVILLE, sanitary engineer, Soil Conservation Service, helped prepare this section.

## TABLE 6.—WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

| Soil name and map symbol | Potential for habitat elements | | | | | | | Potential as habitat for— | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwood trees | Coniferous plants | Wetland plants | Shallow water areas | Openland wildlife | Woodland wildlife | Wetland wildlife |
| Adamsville: | | | | | | | | | | |
| AdB | Poor | Poor | Fair | Fair | Fair | Poor | Poor | Poor | Fair | Poor. |
| Anclote: | | | | | | | | | | |
| Ae | Very poor. | Poor | Poor | Fair | Poor | Good | Good | Poor | Fair | Good. |
| [1] AN: | | | | | | | | | | |
| Anclote part | Very poor. | Poor | Poor | Fair | Poor | Good | Good | Poor | Fair | Good. |
| Tomoka part | Very poor. | Poor | Poor | Fair | Poor | Good | Good | Poor | Poor | Good. |
| Apopka: | | | | | | | | | | |
| ApB, ApC | Poor | Fair | Fair | Poor | Fair | Very poor. | Very poor. | Fair | Poor | Very poor. |
| Arredondo: | | | | | | | | | | |
| ArB, ArC | Poor | Fair | Good | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| [1] AsB: | | | | | | | | | | |
| Arredondo part | Poor | Fair | Good | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Urban land part. | | | | | | | | | | |
| Astatula: | | | | | | | | | | |
| AtB, AtC | Poor | Poor | Poor | Poor | Poor | Very poor. | Very poor. | Poor | Poor | Very poor. |
| Blichton: | | | | | | | | | | |
| BcA | Poor | Fair | Fair | Good | Good | Fair | Fair | Fair | Good | Fair. |
| BcB | Poor | Fair | Fair | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| [1] BdB: | | | | | | | | | | |
| Blichton part | Poor | Fair | Fair | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| Urban land part. | | | | | | | | | | |
| Bluff: | | | | | | | | | | |
| Bf | Very poor. | Poor | Fair | Fair | Fair | Good | Good | Poor | Fair | Good. |
| Boardman: | | | | | | | | | | |
| BoC | Poor | Fair | Fair | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| BoD | Very poor. | Poor | Fair | Good | Good | Poor | Very poor. | Poor | Fair | Very poor. |
| Borrow pits: | | | | | | | | | | |
| Bp. | | | | | | | | | | |
| Candler: | | | | | | | | | | |
| CaB, CaC | Poor | Fair | Fair | Poor | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| CwA | Very poor. | Fair | Fair | Poor | Fair | Very poor. | Very poor. | Poor | Fair | Very poor. |
| Eaton: | | | | | | | | | | |
| Ea | Poor | Fair | Fair | Fair | Good | Fair | Fair | Fair | Good | Fair. |
| Electra: | | | | | | | | | | |
| EcB | Poor | Poor | Fair | Poor | Poor | Poor | Poor | Poor | Poor | Poor. |
| Eureka: | | | | | | | | | | |
| Er, Es | Poor | Fair | Fair | Fair | Good | Good | Good | Fair | Good | Good. |

### TABLE 6.—WILDLIFE HABITAT POTENTIALS—Continued

| Soil name and map symbol | Potential for habitat elements | | | | | | | Potential as habitat for— | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwood trees | Coniferous plants | Wetland plants | Shallow water areas | Openland wildlife | Woodland wildlife | Wetland wildlife |
| Fellowship: | | | | | | | | | | |
| FeB | Poor | Fair | Fair | Fair | Fair | Poor | Poor | Fair | Fair | Poor. |
| FeC | Poor | Fair | Fair | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Fellowship variant: | | | | | | | | | | |
| FgB, FgC | Poor | Fair | Fair | Fair | Fair | Poor | Very poor. | Fair | Fair | Very poor. |
| Flemington: | | | | | | | | | | |
| FmA | Poor | Good | Fair | Good | Good | Fair | Good | Fair | Good | Fair. |
| FmB | Poor | Good | Fair | Good | Good | Fair | Poor | Fair | Good | Good. |
| Gainesville: | | | | | | | | | | |
| GaB, GaC | Fair | Fair | Good | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Hague: | | | | | | | | | | |
| HaB, HaC | Fair | Fair | Good | Fair | Good | Very poor. | Very poor. | Fair | Good | Very poor. |
| [1] HgB: | | | | | | | | | | |
| Hague part | Fair | Fair | Good | Fair | Good | Very poor. | Very poor. | Fair | Good | Very poor. |
| Urban land part. | | | | | | | | | | |
| Holopaw: | | | | | | | | | | |
| Ho | Poor | Fair | Fair | Poor | Fair | Fair | Fair | Fair | Fair | Fair. |
| Jumper: | | | | | | | | | | |
| JuB | Poor | Fair | Good | Poor | Fair | Poor | Poor | Fair | Fair | Poor. |
| Kanapaha: | | | | | | | | | | |
| KaB | Poor | Fair | Fair | Fair | Fair | Poor | Poor | Fair | Fair | Poor. |
| Kendrick: | | | | | | | | | | |
| KeA, KeB, KeC | Poor | Fair | Good | Fair | Good | Poor | Very poor. | Fair | Good | Very poor. |
| Lochloosa: | | | | | | | | | | |
| LoA | Fair | Fair | Good | Fair | Fair | Poor | Fair | Fair | Fair | Poor. |
| LoB, LoC | Fair | Fair | Good | Fair | Fair | Poor | Very poor. | Fair | Fair | Very poor. |
| Lynne: | | | | | | | | | | |
| Ly | Poor | Fair | Fair | Poor | Fair | Fair | Fair | Fair | Fair | Fair. |
| Martel: | | | | | | | | | | |
| Ma | Very poor. | Poor | Poor | Poor | Poor | Good | Good | Poor | Poor | Good. |
| Micanopy: | | | | | | | | | | |
| McB, McC | Fair | Fair | Good | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| Okeechobee: | | | | | | | | | | |
| Ok | Very poor. | Poor | Poor | Poor | Poor | Good | Good | Poor | Poor | Good. |
| Paisley: | | | | | | | | | | |
| Pa | Poor | Fair | Fair | Fair | Fair | Good | Good | Fair | Fair | Good. |
| Pamlico: | | | | | | | | | | |
| [1] PB: | | | | | | | | | | |
| Pamlico part. | | | | | | | | | | |
| Martel variant part | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Good | Good | Very poor. | Very poor. | Good. |

TABLE 6.—WILDLIFE HABITAT POTENTIALS—Continued

| Soil name and map symbol | Potential for habitat elements | | | | | | | Potential as habitat for— | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Grain and seed crops | Grasses and legumes | Wild herbaceous plants | Hardwood trees | Coniferous plants | Wetland plants | Shallow water areas | Openland wildlife | Woodland wildlife | Wetland wildlife |
| Pedro: | | | | | | | | | | |
| [1] PeB: | | | | | | | | | | |
| Pedro part | Poor | Fair | Fair | Poor | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Arredondo part | Poor | Fair | Good | Fair | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Placid: | | | | | | | | | | |
| Pm | Poor | Fair | Fair | Poor | Fair | Good | Good | Fair | Fair | Good. |
| [1] Pn: | | | | | | | | | | |
| Placid part | Poor | Fair | Fair | Poor | Fair | Good | Good | Fair | Fair | Good. |
| Pompano part | Poor | Fair | Poor | Poor | Poor | Fair | Fair | Poor | Poor | Fair. |
| Pomona part | Poor | Fair | Fair | Poor | Fair | Fair | Fair | Fair | Fair | Fair. |
| Pomona: | | | | | | | | | | |
| Po | Poor | Fair | Fair | Poor | Fair | Fair | Fair | Fair | Fair | Fair. |
| Pompano: | | | | | | | | | | |
| Pp, Pr | Poor | Fair | Poor | Poor | Poor | Fair | Fair | Poor | Poor | Fair. |
| Sparr: | | | | | | | | | | |
| SpB, SpC | Poor | Fair | Good | Fair | Fair | Poor | Very poor. | Fair | Fair | Very poor. |
| [1] SuB: | | | | | | | | | | |
| Sparr part | Poor | Fair | Good | Fair | Fair | Poor | Very poor. | Fair | Fair | Very poor. |
| Urban land part. | | | | | | | | | | |
| Tavares: | | | | | | | | | | |
| TaB | Poor | Fair | Fair | Poor | Fair | Very poor. | Very poor. | Fair | Fair | Very poor. |
| Terra Ceia: | | | | | | | | | | |
| Tc | Very poor. | Poor | Poor | Poor | Poor | Good | Good | Poor | Poor | Good. |
| Terra Ceia variant: | | | | | | | | | | |
| Te | Very poor. | Poor | Poor | Poor | Poor | Good | Good | Poor | Poor | Good. |
| Tomoka: | | | | | | | | | | |
| To | Very poor. | Poor | Poor | Fair | Poor | Good | Good | Poor | Poor | Good. |
| Udalfic Arents: | | | | | | | | | | |
| UaA | Poor | Poor | Poor | Poor | Poor | Very poor. | Very poor. | Poor | Poor | Very poor. |
| UaF | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. | Very poor. |
| Urban land: | | | | | | | | | | |
| Ur. | | | | | | | | | | |
| Wacahoota: | | | | | | | | | | |
| WaC | Poor | Fair | Fair | Fair | Fair | Poor | Very poor. | Fair | Fair | Very poor. |
| Wacahoota variant: | | | | | | | | | | |
| WgB, WgC | Poor | Fair | Fair | Fair | Fair | Poor | Very poor. | Fair | Fair | Very poor. |
| Zuber: | | | | | | | | | | |
| ZuA, ZuB | Fair | Fair | Good | Good | Good | Poor | Very poor. | Fair | Good | Very poor. |
| ZuC | Poor | Fair | Good | Good | Good | Very poor. | Very poor. | Fair | Good | Very poor. |

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[1] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

8. Supplement other publications, such as maps, reports, and aerial photographs, that are used to prepare engineering reports for a specific area.

Most of the information in this section is presented in tables 7, 8, 9, 10, 11, and 12, which show results of engineering laboratory tests on soil samples, estimates of soil properties significant in engineering, and interpretations for various engineering uses.

The engineering interpretations reported here do not eliminate the need for further investigation at sites selected for engineering works, especially where loads are heavy and excavations deeper than the depths reported. Also, inspection of sites is needed because many delineated areas of a given soil mapping unit contain small areas of other kinds of soil that have strongly contrasting properties and different suitabilities or limitations for soil engineering. Even in these situations, however, the soil map is useful for planning more detailed field investigations and for suggesting the kinds of problems that may be expected.

Some terms used in this soil survey have special meanings in soil science that may not be familiar to engineers. The Glossary defines many of these terms.

### *Engineering classification systems*

The two systems most commonly used in classifying soils for engineering are the system adopted by the American Association of Highway and Transportation Officials (AASHTO) (*1*) and the Unified system (*2*) used by the Soil Conservation Service, the Department of Defense, and others.

The AASHTO system classifies soils according to those properties that affect use in highway construction and maintenance. In this system a soil is classified in one of seven basic groups ranging from A–1 through A–7 on the basis of grain-size distribution, liquid limit, and plasticity index. In group A–1 are gravelly soils, which have high bearing strength and are the best soils for subgrade, or foundation. At the other extreme, in group A–7, are clay soils, which have low strength when wet and are the poorest soils for subgrade. Where laboratory data are available to justify a further breakdown, the A–1, A–2, and A–7 groups are divided as follows: A–1–a, A–1–b, A–2–4, A–2–5, A–2–6, A–2–7, A–7–5, and A–7–6. As additional refinement, the engineering value of a soil material can be indicated by a group index number. Group indexes range from 0 for the best material to 20 or more for the poorest. The AASHTO classification for tested soils, with group index numbers in parentheses, is shown in table 6; the estimated classification, without group index numbers, is shown in table 7 for all soils mapped in the survey area.

In the Unified system soils are classified according to particle-size distribution, plasticity, liquid limit, and organic matter. Soils are grouped in 15 classes. These are eight classes of coarse-grained soils, identified as GW, GP, GM, GC, SW, SP, SM, and SC; six classes of fine-grained soils, identified as ML, CL, OL, MH, CH, and OH; and one class of highly organic soils, identified as Pt. Soils on the borderline between two classes are designated by symbols for both classes, for example, SM–SC.

In the eight classes of coarse-grained soils, half or more of the particles are larger than 0.074 millimeter. The symbol G identifies gravel, and S identifies sand. These symbols are combined with W, which means well graded, or P, poorly graded. The symbol SM identifies sand that has fines of silt, and SC, sand that has fines of clay.

In the six classes of fine-grained soils, more than half of the particles are smaller than 0.074 millimeter. The symbol M identifies silt; C, clay; and O, organic soil. These symbols are combined with L, which means low liquid limit, or H, high liquid limit.

Table 7 shows the Unified classification of specified soils in the survey area, as determined by laboratory tests. Table 8 shows the estimated Unified classification of all the soils.

### *Engineering test data*

Table 7 contains engineering test data for some of the major soils of the survey area. The tests were performed by the Soils Laboratory, Florida Department of Transportation, Bureau of Materials and Research, to help evaluate the soils for engineering purposes. Classifications in table 7 are based on data obtained by mechanical analysis and by tests to determine liquid limits and plastic limits.

The mechanical analysis was made by the hydrometer method. In this method the various grain-size fractions are calculated on the basis of all the material in the soil sample, including that coarser than 2 millimeters in diameter. The mechanical analysis used in this method should not be used in naming textural classes of soils.

Compaction, or moisture-density, data are important in earthwork. If a soil material is compacted at successively higher moisture content, assuming that the compactive effort remains constant, the density of the compacted material increases until the *optimum moisture content* is reached. After that, density decreases with increase in moisture content. The highest dry density obtained in the compactive test is termed *maximum dry density*. As a rule, maximum strength of earthwork is obtained if the soil is compacted to the maximum dry density.

Liquid limit and plasticity index indicate the effect of water on the strength and consistence of soil material. As the moisture content of a dry clayey soil is increased, the material changes from semisolid to plastic. If the moisture content is further increased, the material changes from plastic to liquid. The plastic limit is the moisture content at which the soil material changes from semisolid to plastic; and the liquid limit, from plastic to liquid. The plasticity index is the numerical difference between the liquid limit and the plastic limit. It indicates the range of moisture content within which a soil material is plastic. The data on liquid limit and plasticity index in table 7 are based on laboratory tests of soil samples.

### *Soil properties significant in engineering*

Estimates of physical and chemical soil properties significant in engineering are given in tables 8 and 9. These estimates are made for typical soil profiles, by layers sufficiently different to have different significance for soil engineering. The estimates are based on field observations made in the course of mapping, on test data for these and similar soils, and on experience with the same kinds of soil in other areas.

Following are explanations of some of the columns in table 8.

Soil texture is described in table 8 in the standard terms used by the Department of Agriculture. These terms take into account relative percentages of sand, silt, and clay in soil material that is less than 2 millimeters in diameter. Sandy clay loam, for example, is 20 to 35 percent clay, less than 28 percent silt, and 45 percent or more sand. Texture is estimated on the basis of field examination and laboratory data. If the soil contains gravel or other particles coarser than sand, an appropriate modifier is added, as for example, "gravelly loamy sand." "Sand," "silt," "clay," and some of the other terms used in USDA textural classification are defined in the Glossary.

The percent of soil material passing sieve numbers 4, 10, 40, and 200 are estimated minimum and maximum amounts in each significant layer of the soil profile.

Liquid limit and plasticity index are estimated in table 8. They are explained under the heading "Engineering Test Data."

The following paragraphs explain most of the columns in table 9.

Permeability is the quality that enables a soil to transmit water or air. It is estimated on the basis of those soil characteristics observed in the field, particularly structure and texture. The estimates in table 9 do not take into account lateral seepage or such transient soil features as plowpans and surface crusts.

Available water capacity is the ability of soils to hold water for use by most plants. It is commonly defined as the difference between the amount of water in the soil at field capacity and the amount at the wilting point of most crop plants.

Soil reaction is the degree of acidity or alkalinity of a soil, expressed in pH values. The pH value and terms used to describe soil reaction are explained in the Glossary.

Salinity refers to the concentration of salts and exchangeable sodium in the soil. It is expressed in terms of the electrical conductivity of a saturation extract, in millimhos per centimeter at 25°C. A value of less than 2 indicates that salinity effects are of no importance or are generally negligible. All the soils in the survey area have a value of less than 2.

Shrink-swell potential is the change in volume to be expected of soil material with changes in moisture content, that is, the extent to which the soil shrinks when dry or swells when wet. The extent of shrinking and swelling is influenced by the amount and kind of clay in the soil. Shrinking and swelling of soils causes much damage to building foundations, roads, and other structures. A *high* shrink-swell potential indicates a hazard to maintenance of structures built in, on, or with material having this rating.

Risk of corrosion, as used in table 9, is the potential soil-induced chemical action that dissolves or weakens uncoated steel or concrete. The risk of corrosion on uncoated steel is related to such soil properties as drainage, texture, total acidity, and electrical conductivity of the soil material. The risk of corrosion on concrete is influenced mainly by the content of sodium or magnesium sulfate, but also by soil texture and acidity. Installations that intersect soil boundaries or soil horizons are more susceptible to corrosion than installations entirely in one kind of soil or in one soil horizon. A rating of *low* indicates a low probability of soil-induced corrosion damage. A rating of *high* indicates a high probability of damage, so that protective measures for steel and more resistant concrete should be used to avoid or minimize damage.

Erosion factors K and T predict the amount of soil loss resulting from water erosion on cropland. The erodibility factor, K, is a measure of the rate at which soil erodes. Values are expressed as tons of soil loss per acre per unit of rainfall, which is the R factor, after continuous fallow of 3 years or more on a 9 percent slope that is 73 feet long. Thus, the K factor reflects the rate that soil erodes when other factors affecting erosion are constant. The K factors shown in table 9 range from 0.10 to 0.37. The lower the K factor, the lower the erosion potential.

Soil properties that influence water erosion are those that affect the infiltration rate, the movement of water through the soil, and the water-storage capacity and those that resist dispersion, splashing, abrasion, and transporting forces from rainfall and runoff. Most important are the texture and organic-matter content of the surface layer, the size and stability of structural aggregates in the surface layer, the permeability of the subsoil, and the depth to slowly permeable layers.

The erosion tolerance factor, T, sometimes called permissible soil loss, is the maximum rate of soil erosion permitted if a high level of crop productivity is to be sustained economically. The rate is expressed in tons of soil loss per acre per year. It ranges from 1 to 5 tons, depending upon soil properties, soil depth, and past erosion.

Wind erodibility grouping predicts the susceptibility of soils to soil blowing. The numbers 1 to 8 specify the groups. The lower the number, the higher the potential soil loss from soil blowing.

On many sandy soils in the survey area, soil blowing is the dominant problem during dry periods, especially in March, April, and May. Organic soils, which are naturally wet, are not subject to soil blowing unless they are drained and cropped.

The most serious damage resulting from soil blowing is the gradual removal of silt, clay, and organic matter from the surface soil. Soil blowing can severely damage crops. It can also create traffic problems, fill drainage ditches, block roads, bury equipment, and result in dust and health problems in residential areas.

Soil blowing is common on building sites where the surface is exposed, in areas of excavated spoil ma-

TABLE 7.—ENGINEERING

[Tests performed by the Florida State Department of Transpotation (FDOT) in cooperation with the U.S. Bureau of Public

| Soil name and location | Parent material | FDOT report number | Depth | Moisture density[1] | |
|---|---|---|---|---|---|
| | | | | Maximum dry density | Optimum moisture content |
| | | | *In* | *Lb/cu ft* | *Pct* |
| Blichton sand:<br>2.5 miles southwest of Ocala, 0.9 mile west-northwest of intersection of Buffington Road and State Road 475, SW¼NE¼ sec. 38, T. 15 S., R. 22 E., Catalina de Jesus Hijuelas Grant. (Modal) | Thick beds of loamy marine sediment. | S65Fla-42-8-2 | 5–11 | 113 | 11 |
| | | S65Fla-42-8-5 | 30–45 | 95 | 25 |
| Eureka loamy fine sand:<br>150 feet east of State Road 315, 1.5 miles north of its intersection with State Road 40, NE¼ NE¼ sec. 33, T. 14 S., R. 23 E. (Modal) | Thick beds of clayey marine sediment. | S70Fla-42-84-13 | 13–17 | 82.6 | 22.4 |
| | | S70Fla-42-84-14 | 28–69 | 80.7 | 20.8 |
| Fellowship loamy sand:<br>1.7 miles north of Flemington at intersection of State Road 321 and Dungarvin Road, 0.1 mile east of intersection and 200 feet south, NW¼NW¼ sec. 22, T. 12 S., R. 20 E. (Modal) | Thick beds of clayey marine sediment. | S65Fla-42-3-1 | 0–11 | 106 | 17 |
| | | S65Fla-42-3-4 | 25–32 | 89 | 30 |
| | | S65Fla-42-3-6 | 42–62 | 86 | 30 |
| Flemington loamy sand:<br>About 2.5 miles northwest of intersection of U.S. Highway 27 and State Highway 326 and 700 feet northeast of U.S. Highway 27, NW¼NE¼ sec. 36, T. 13 S., R. 19 E. (Modal) | Thick beds of fine textured marine sediment. | S71Fla-42-103-3 | 31–53 | 70 | 30 |
| | | S71Fla-42-103-4 | 67–74 | 70 | 29 |
| Gainesville loamy sand:<br>0.5 mile east of Lake Weir Avenue and 0.25 mile northeast of Bible Baptist Church, NW¼ SW¼ sec. 28, T. 15 S., R. 22 E. (Modal) | Thick beds of sandy marine material. | S65Fla-42-12-2 | 5–10 | 116 | 12 |
| | | S65Fla-42-12-4 | 23–90 | 119 | 11 |
| | | S65Fla-42-12-6 | 90–100 | 117 | 12 |
| Hague sand:<br>400 feet east of Bible Baptist Church on east side of Lake Weir Avenue, NW¼SW¼ sec. 13 S., R. 19 E. (Modal) | Thick beds of sandy and loamy deposits influenced by phosphatic material. | S65Fla-42-1-2 | 8–17 | 115 | 10 |
| | | S65Fla-42-1-5 | 27–40 | 118 | 11 |
| | | S65Fla-42-1-8 | 62–74 | 111 | 15 |
| Kanapaha fine sand:<br>0.5 mile west of intersection of State Road 475 and Buffington Road and 600 feet west of Southwest 7th Avenue, SW¼ NE¼ sec. 6, T. 15 S., R. 22 E., Catalina de Jesus Hijuelas Grant. (Modal) | Thick beds of sandy and loamy deposits influenced by phosphatic material. | S66Fla-42-51-5 | 7–40 | 111 | 12 |
| | | S66Fla-42-51-6 | 55–70 | 110 | 16 |
| Kendrick loamy sand:<br>0.25 mile east of Shady Road, 2.5 miles south of State Road 200, SW¼NW¼ sec. 1, T. 15 S., R. 21 E. (Modal) | Thick beds of loamy deposits influenced by phosphatic material. | S69Fla-42-75-1 | 7–20 | 116 | 13 |
| | | S69Fla-42-75-2 | 32–45 | 105 | 18 |
| Lochloosa fine sand:<br>0.8 mile south of Fellowship, 200 feet east of paved road, NW¼NE¼ sec. 34, T. 14 S., R. 20 E. (Modal) | Thick beds of loamy marine deposits influenced by phosphatic material. | S66Fla-42-53-7 | 7–17 | 113 | 11 |
| | | S66Fla-42-53-8 | 28–32 | 119 | 12 |
| | | S66Fla-42-53-9 | 35–37 | 108 | 15 |
| | | S66Fla-42-53-10 | 69–75 | 103 | 20 |

## TEST DATA

Roads, in accordance with standard procedures of the American Association of State Highway and Transportation Officials AASHTO)]

| Mechanical analysis[2] | | | Liquid limit | Plasticity index | Classification | |
|---|---|---|---|---|---|---|
| Percentage passing sieve— | | | | | | |
| Number 10 (2.0 mm) | Number 40 (0.42 mm) | Number 200 (0.074 mm) | | | AASHTO[3] | Unified[4] |
| | | | *Pct* | | | |
| 100 | 90 | 12 | --- | [5] NP | A-2-4(0) | SP-SM |
| 100 | 93 | 40 | 36 | 19 | A-6(3) | SC |
| 100 | 97 | 74 | 73 | 46 | A-7-6(20) | CH |
| 100 | 97 | 76 | 80 | 49 | A-7-5(20) | CH |
| 89 | 77 | 18 | --- | NP | A-2-4(0) | SM |
| 91 | 79 | 48 | 57 | 39 | A-7-6(10) | SC |
| 100 | 99 | 89 | 100 | 76 | A-7-6(20) | CH |
| 100 | 99 | 79 | 85 | 51 | A-7-5(20) | CH |
| 100 | 99 | 82 | 96 | 61 | A-7-5(20) | |
| 100 | 92 | 17 | --- | NP | A-2-4(0) | SM |
| 100 | 91 | 17 | --- | NP | A-2-4(0) | SM |
| 100 | 91 | 17 | --- | NP | A-2-4(0) | SM |
| 100 | 81 | 11 | --- | NP | A-2-4(0) | SP-SM |
| 100 | 85 | 18 | 17 | 3 | A-2-4(0) | SM |
| 100 | 84 | 28 | 27 | 27 | A-2-6(0) | SC |
| 100 | 92 | 10 | --- | NP | A-3(0) | SP-SM |
| 100 | 95 | 34 | 29 | 14 | A-2-6(1) | SC |
| 94 | 79 | 20 | --- | NP | A-2-4(0) | SM |
| 100 | 86 | 27 | 31 | 11 | A-2-6(0) | SC |
| 100 | 92 | 12 | --- | NP | A-2-4(0) | SP-SM |
| 100 | 92 | 24 | --- | NP | A-2-4(0) | SM |
| 100 | 94 | 37 | 32 | 12 | A-6(1) | SC |
| 100 | 95 | 40 | 39 | 16 | A-6(3) | SC |

TABLE 7.—ENGINEERING

| Soil name and location | Parent material | FDOT report number | Depth | Moisture density[1] | |
|---|---|---|---|---|---|
| | | | | Maximum dry density | Optimum moisture content |
| | | | *In* | *Lb/cu ft* | *Pct* |
| Micanopy fine sand:<br>3 miles northwest of Blichton and 0.5 mile northeast of U.S. Highway 27, NE¼SE¼ sec. 25, T. 13 S., R. 19 E. (Modal) | Thick beds of clayey deposits influenced by phosphatic material. | S68Fla-42-68-11<br>S68Fla-42-68-12 | 20–26<br>45–53 | 91<br>98 | 27<br>20 |

[1] Based on AASHTO Designation T 99, Method A or C (*1*).

[2] Mechanical analyses according to the AASHTO Designation T 88 (*1*). Results by this procedure may differ somewhat from results obtained by the soil survey procedure of the Soil Conservation Service (SCS). In the AASHTO procedure, the fine material is analyzed by the hydrometer method and the various grain-size fractions are calculated on the basis of all the material, including that coarser than 2 millimeters in diameter. In the SCS soil survey procedure, the fine material is analyzed by the pipette method and the material coarser than 2 millimeters in diameter is excluded from calculations of grain-size fractions. The mechanical analysis used in this table is not suitable for use in naming textural classes for soils.

terial, on exposed knolls, in areas where tracks or paths have been made by machinery or animals, and on corners or turnrows where the soil is excessively pulverized. It occurs when a wind of adequate velocity blows across a smooth, bare soil surface of loose, dry, finely granulated material.

### *Water management*

Many soil properties and site features that affect water management have been identified in this soil survey. In table 10 the degree of soil limitation and soil and site features that affect use are indicated for each kind of soil. This information is significant in planning, installing, and maintaining water-control structures.

Soil and site limitations are expressed as slight, moderate, and severe. *Slight* means that the soil properties and site features are generally favorable for the specified use and that any limitation is minor and easily overcome. *Moderate* means that some soil properties or site features are unfavorable for the rated use but can be overcome or modified by special planning and design. *Severe* means that the soil properties and site features are so unfavorable and so difficult to correct or overcome that major soil reclamation, special design, or intensive maintenance is required.

*Pond reservoirs* hold water behind a dam or embankment. Soils suitable for this use have low seepage potential, which is determined by the permeability and depth over fractured or permeable bedrock or other permeable material.

*Embankments, dikes, and levees* require soil material that is resistant to seepage, erosion, and piping and is of favorable stability, shrink-swell potential, shear strength, and compaction characteristics. Stones and organic matter in a soil downgrade the suitability of a soil for use in embankments, dikes, and levees.

*Aquifer-fed excavated ponds* are bodies of water created by excavating a pit or dugout into a groundwater aquifer. Excluded are ponds fed by runoff and embankment ponds where the depth of water impounded against the embankment exceeds 3 feet. It is assumed that the pond is properly designed, located, and constructed and that the water is of good quality. Properties affecting aquifer-fed ponds are a permanent water table, the permeability of the aquifer, and the ease of excavation.

*Drainage* is water control that is achieved mainly by lowering or otherwise manipulating the water table. Drainage is affected by such soil properties as permeability, texture, and structure; depth to claypan, rock, or other layers that influence rate of water movement; depth to the water table; slope; stability in ditchbanks; and salinity or alkalinity. It is also affected by susceptibility to stream overflow and availability of outlets.

*Irrigation* supplies the soil with water for use by plants. Irrigation is affected by such features as slope, susceptibility to flooding or water erosion, texture, depth of root zone, rate of water intake at the surface, permeability of the soil below the surface layer, amount of water held available to plants, need for drainage, and depth to the water table or bedrock. Subsurface irrigation may be feasible in wet soils. A subsurface irrigation system keeps the water table within controlled limits. It permits adequate capillary movement of water from the water table into the root zone. Open ditches generally are used, and the same system can remove excess water after heavy rainfall. Subsurface irrigation is feasible only if the soil is nearly level and has a water table near the surface. Soil features that most affect subsurface irrigation are depth to the water table, permeability, flooding, and slope.

*Terraces and diversions* are manmade features designed to slow down or divert runoff and thus minimize erosion. Factors considered in planning and construction are stability of the soils, difficulty of establishing and maintaining plant cover, and sedimentation of channels. The main features affecting the suitability of soils for terraces and diversions are uniformity of slope and steepness; depth to bedrock or other unfavorable material; large stones; resistance to soil blowing, water erosion, and soil slipping; texture; permeability; difficulty of establishing plant cover; availability of outlets; and wetness.

TEST DATA—Continued

| Mechanical analysis [2] | | | Liquid limit | Plasticity index | Classification | |
|---|---|---|---|---|---|---|
| Percentage passing sieve— | | | | | | |
| Number 10 (2.0 mm) | Number 40 (0.42 mm) | Number 200 (0.074 mm) | | | AASHTO [3] | Unified [4] |
| | | | *Pct* | | | |
| 100 | 98 | 64 | 58 | 30 | A-7-6(16) | CH |
| 100 | 98 | 56 | 51 | 29 | A-7-6(13) | CH |

[3] Based on AASHTO Designation M 145-66 (*1*).

[4] Based on ASTM Standard D 2487-69 (*2*).

[5] Nonplastic.

*Grassed waterways* are constructed to channel runoff at nonerosive velocities to outlets. They have a grass cover and can be crossed by farm machinery. Features that affect the use of the soils for grassed waterways are erodibility, texture and thickness of soil layers, natural drainage, large stones, slope, droughtiness, and seepage.

### *Construction materials*

The suitability of each soil as a source of road fill, sand, gravel, and topsoil is indicated in table 11. The suitability is determined by studying soil properties, test data, and the predictable behavior of the soils. Ratings of *good, fair,* and *poor* express the suitability of the soils for road fill and topsoil. Ratings of *good* or *fair* indicate a probable source of sand and gravel, and ratings of *poor* or *unsuited* indicate an improbable source.

*Road fill* is soil material used in embankments for roads. The ratings reflect the ease of excavating the material at borrow areas and the predicted performance of soil after it has been placed in an embankment that has been properly compacted and provided with adequate drainage.

*Sand* is used in great quantities in many kinds of construction. The ratings in table 11 provide guidance about where to look for probable sources. A soil rated as a *good* or *fair* source of sand generally has a layer at least 3 feet thick, the top of which is within a depth of 6 feet. The ratings do not take into account the size of the deposits, the location of the water table, or other factors that affect mining the material and do not indicate the quality of the deposit. A good source of sand is a soil in the SP Unified soil group. Increases in the amount of silt and clay in a soil decrease its suitability as a probable source of sand.

*Gravel* is material that is larger than very coarse sand particles but is no more than 3 inches in diameter. Fragments of gravel are rounded or angular and are not prominently flattened. All soils in this survey area are rated *unsuited* as sources of gravel. Some that are underlain by limestone bedrock may be good sources of material to crush for aggregate.

*Topsoil* is used for topdressing an area where vegetation is to be established and maintained. Suitability is affected by the ease of working and spreading the soil material in preparing a seedbed; the natural fertility of the material, or the response of plants when fertilizer is applied; the absence of substances toxic to plants; and the texture of the soil material and its content of stone fragments. Also considered in the ratings is damage that will result at the area from which topsoil is removed.

### *Soil and water features*

Table 12 lists several soil and water features that affect engineering. Protecting an engineering site from runoff, soil blowing, and water erosion, is essential. Unless the site is protected, tremendous soil loss can result. Research has shown that as much as 8,000 cubic yards of soil is lost from a denuded 40-acre tract after a 5-inch rain. Practical methods can reduce such losses. Following are explanations of some of the columns in table 12.

*Hydrologic groups* estimate runoff after rainfall. Soil properties that influence the minimum rate of infiltration into the bare soil after prolonged wetting are depth to a water table, water intake rate and permeability, and depth to layers of slowly permeable or very slowly permeable soil.

In table 12 the soils are assigned to four hydrologic groups, which are designated by the letters A, B, C, or D. Group A indicates the lowest runoff potential. Dual designations are given for a wet soil that can be adequately drained. The first letter applies to the drained soil; the second letter, to the undrained soil.

Hydrologic group A indicates low runoff potential. The soil has a high infiltration rate even if thoroughly wet and a high rate of water transmission. Hydrologic group B indicates moderately low runoff potential. The soil has a moderate infiltration rate if thoroughly wet and a moderate rate of water transmission. Hydrologic group C indicates moderately high runoff potential. The soil has a slow infiltration rate if thoroughly wet and a slow rate of water transmission. Hydrologic group D indicates high runoff potential. The soil

## TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS

[The symbol < means less than; > means greater than. Absence of an entry means that data were not estimated]

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| | *In* | | | | *Pct* | | | | | *Pct* | |
| **Adamsville:** | | | | | | | | | | | |
| AdB | 0–88 | Sand | SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 90–100 | 5–12 | --- | [1] NP |
| **Anclote:** | | | | | | | | | | | |
| Ae | 0–16 | Sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 95–100 | 85–100 | 2–12 | --- | NP |
| | 16–80 | Sand, fine sand, loamy fine sand. | SP, SP-SM, SM | A-3, A-2-4 | 0 | 100 | 95–100 | 85–100 | 2–20 | --- | NP |
| [2] AN: | | | | | | | | | | | |
| Anclote part | 0–16 | Sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 95–100 | 85–100 | 2–12 | --- | NP |
| | 16–80 | Sand, fine sand, loamy fine sand. | SP, SP-SM, SM | A-3, A-2-4 | 0 | 100 | 95–100 | 85–100 | 2–20 | --- | NP |
| Tomoka part | 0–32 | Muck | Pt | | 0 | | | | | --- | NP |
| | 32–43 | Sand, fine sand, loamy sand. | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 80–95 | 5–15 | --- | NP |
| | 43–60 | Sandy clay loam, sandy loam, fine sandy loam. | SM, SM-SC, SC | A-2, A-4, A-6 | 0 | 100 | 100 | 80–95 | 25–40 | <35 | NP–15 |
| **Apopka:** | | | | | | | | | | | |
| ApB, ApC | 0–55 | Sand | SP, SP-SM | A-3 | 0 | 100 | 100 | 85–100 | 3–10 | --- | NP |
| | 55–81 | Sandy loam, sandy clay loam. | SM-SC, SC | A-2-4, A-2-6, A-4, A-6 | 0 | 98–100 | 95–100 | 60–95 | 20–40 | 20–40 | 4–20 |
| **Arredondo:** | | | | | | | | | | | |
| ArB, ArC | 0–65 | Sand | SP-SM, SM | A-2-4, A-3 | 0 | 95–100 | 90–100 | 75–95 | 5–15 | --- | NP |
| | 65–70 | Loamy sand, loamy fine sand, sandy loam. | SM, SM-SC | A-2-4 | 0 | 95–100 | 90–100 | 75–95 | 13–25 | <25 | NP–7 |
| | 70–90 | Sandy loam, fine sandy loam, sandy clay loam. | SC, SM-SC | A-2-4, A-2-6, A-4, A-6 | 0 | 95–100 | 90–100 | 85–95 | 20–40 | 21–40 | 4–20 |
| [3] AsB: | | | | | | | | | | | |
| Arredondo part. | 0–65 | Sand | SP-SM, SM | A-2-4, A-3 | 0 | 95–100 | 90–100 | 75–95 | 5–15 | --- | NP |
| | 65–70 | Loamy sand, loamy fine sand, sandy loam. | SM, SM-SC | A-2-4 | 0 | 95–100 | 90–100 | 75–95 | 13–25 | <25 | NP–7 |
| | 70–90 | Sandy loam, fine sandy loam, sandy clay loam. | SC, SM-SC | A-2-4, A-2-6, A-4, A-6 | 0 | 95–100 | 90–100 | 85–95 | 20–40 | 21–40 | 4–20 |
| Urban land part. | | | | | | | | | | | |
| **Astatula:** | | | | | | | | | | | |
| AtB, AtC | 0–92 | Sand | SP, SP-SM | A-3 | 0 | 100 | 100 | 75–99 | 1–7 | --- | NP |

TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS—Continued

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| | *In* | | | | *Pct* | | | | | *Pct* | |
| Blichton: | | | | | | | | | | | |
| BcA, BcB | 0–26 | Sand | SP-SM, SM | A-2-4, A-3 | 0 | 95–100 | 95–100 | 85–98 | 8–25 | --- | NP |
| | 26–30 | Sandy loam, fine sandy loam. | SM, SM-SC | A-2-4 | 0 | 95–100 | 90–100 | 85–98 | 20–30 | <25 | NP–7 |
| | 30–77 | Sandy clay loam. | SC | A-6 | 0 | 95–100 | 95–100 | 85–98 | 36–45 | 30–40 | 11–24 |
| | 77–81 | Stratified sandy loam to sandy clay loam. | SM-SC, SM | A-2-4 | 0 | 95–100 | 95–100 | 80–95 | 20–30 | <25 | NP–7 |
| [2] BdB: | | | | | | | | | | | |
| Blichton part | 0–26 | Sand | SP-SM, SM | A-2-4, A-3 | 0 | 95–100 | 95–100 | 85–98 | 8–25 | --- | NP |
| | 26–30 | Sandy loam, fine sandy loam. | SM, SM-SC | A-2-4 | 0 | 95–100 | 95–100 | 85–98 | 20–30 | <25 | NP–7 |
| | 30–77 | Sandy clay loam. | SC | A-6 | 0 | 95–100 | 95–100 | 85–98 | 36–45 | 30–40 | 11–24 |
| | 77–81 | Stratified sandy loam to sandy clay loam. | SM-SC, SM | A-2-4 | 0 | 95–100 | 90–100 | 80–95 | 20–30 | <25 | NP–7 |
| Urban land part. | | | | | | | | | | | |
| Bluff: | | | | | | | | | | | |
| Bf | 0–13 | Sandy clay, sandy clay loam. | SC | A-6, A-7 | 0 | 100 | 95–100 | 85–95 | 36–50 | 35–50 | 20–35 |
| | 13–29 | Sandy clay loam, sandy clay. | SC,CL,CH | A-6, A-7 | 0 | 100 | 95–100 | 85–95 | 36–55 | 35–55 | 20–40 |
| | 29–38 | Sandy clay loam, sandy clay. | SC | A-6, A-7 | 0 | 95–100 | 90–100 | 80–95 | 36–50 | 35–50 | 20–35 |
| | 38–60 | Sandy clay loam, sandy clay. | SC | A-6, A-7 | 0 | 95–100 | 90–100 | 80–95 | 36–50 | 35–50 | 20–35 |
| Boardman: | | | | | | | | | | | |
| BoC, BoD | 0–16 | Loamy sand | SP-SM, SM | A-2-4, A-3 | 0 | 70–95 | 65–95 | 60–90 | 8–25 | --- | NP |
| | 16–22 | Loamy sand, loamy fine sand, sandy loam. | SM, SM-SC | A-2-4 | 0 | 70–95 | 65–95 | 60–90 | 20–30 | <25 | NP–7 |
| | 22–34 | Sandy clay loam. | SC, GC | A-2, A-4, A-6 | 0 | 70–95 | 65–95 | 60–90 | 30–45 | 25–40 | 8–20 |
| | 34–45 | Sandy clay loam, sandy clay. | SC, GC | A-6, A-7 | 0 | 70–95 | 65–95 | 60–90 | 40–50 | 30–50 | 11–26 |
| | 45–56 | Sandy clay, clay. | SC, CL, GC, CH | A-7 | 0 | 70–100 | 65–100 | 60–95 | 45–60 | 45–60 | 22–35 |
| | 56–68 | Clay | CH | A-7 | 0 | 90–100 | 80–100 | 75–98 | 65–85 | 50–70 | 57–110 |
| Borrow pits: | | | | | | | | | | | |
| Bp. | | | | | | | | | | | |
| Candler: | | | | | | | | | | | |
| CaB, CaC | 0–67 | Sand | SP, SP-SM | A-3 | 0 | 100 | 95–100 | 75–100 | 2–8 | --- | NP |
| | 67–99 | Sand, fine sand | SP-SM | A-3, A-2-4 | 0 | 100 | 95–100 | 75–100 | 5–12 | --- | NP |

TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS—Continued

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| **Candler:** | *In* | | | | *Pct* | | | | | *Pct* | |
| CwA | 0–17 | Clay | CH | A-7 | 0 | 100 | 100 | 95–100 | 80–95 | 50–75 | 50–70 |
| | 17–78 | Sand | SP, SP-SM | A-3 | 0 | 100 | 95–100 | 75–100 | 2–8 | --- | NP |
| **Eaton:** | | | | | | | | | | | |
| Ea | 0–30 | Loamy sand | SM | A-2-4 | 0 | 100 | 95–100 | 75–99 | 13–20 | --- | NP |
| | 30–33 | Sandy clay loam. | SC | A-4, A-6 | 0 | 100 | 95–100 | 90–100 | 36–45 | 25–40 | 8–20 |
| | 33–78 | Sandy clay, clay. | SC, CL, CH | A-4, A-6, A-7 | 0 | 100 | 95–100 | 90–100 | 45–65 | 35–55 | 20–40 |
| | 78–92 | Sandy clay | SC, CL | A-4, A-6, A-7 | 0 | 100 | 95–100 | 90–100 | 40–55 | 30–45 | 15–30 |
| **Electra:** | | | | | | | | | | | |
| EcB | 0–41 | Sand | SP, SP-SM | A-3 | 0 | 100 | 95–100 | 75–99 | 3–10 | --- | NP |
| | 41–50 | Sand, fine sand | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 80–99 | 8–15 | --- | NP |
| | 50–54 | Sand, fine sand | SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 80–99 | 5–12 | --- | NP |
| | 54–72 | Sandy clay loam, sandy clay, sandy loam. | SC, SM-SC | A-2-6, A-2-4, A-6, A-4 | 0 | 100 | 100 | 80–99 | 20–45 | 20–40 | 4–20 |
| **Eureka:** | | | | | | | | | | | |
| Er, Es | 0–13 | Loamy fine sand. | SM | A-2-4 | 0 | 100 | 100 | 85–99 | 15–30 | --- | NP |
| | 13–81 | Sandy clay, clay. | CH, SC, CL | A-7-5, A-7-6 | 0 | 100 | 100 | 85–99 | 45–80 | 45–85 | 30–60 |
| **Fellowship:** | | | | | | | | | | | |
| FeB, FeC | 0–11 | Loamy sand | SM | A-2-4 | 0–5 | 75–90 | 75–90 | 70–85 | 13–28 | --- | NP |
| | 11–18 | Sandy loam | SM, SM-SC | A-2-4 | 0–5 | 75–90 | 75–90 | 70–85 | 25–35 | <28 | NP–7 |
| | 18–25 | Sandy clay loam, sandy clay. | SC | A-6, A-7 | 0–5 | 75–90 | 75–90 | 70–85 | 36–50 | 35–50 | 25–40 |
| | 25–42 | Sandy clay, clay. | SC, CL, CH | A-7 | 0–5 | 75–95 | 75–95 | 70–85 | 45–75 | 41–65 | 30–50 |
| | 42–83 | Clay | CH | A-7 | 0 | 100 | 95–100 | 90–99 | 75–90 | 65–150 | 40–90 |
| **Fellowship variant:** | | | | | | | | | | | |
| FgB, FgC | 0–14 | Gravelly loamy fine sand. | GM, SM | A-1 | 0–10 | 30–65 | 25–50 | 20–45 | 13–20 | --- | NP |
| | 14–20 | Gravelly sandy clay loam, gravelly sandy clay. | GC | A-2, A-6, A-7 | 0–10 | 40–60 | 35–50 | 30–45 | 25–40 | 35–50 | 25–40 |
| | 20–36 | Gravelly sandy clay, gravelly clay. | SC, CL, CH, GC | A-6, A-7 | 0–10 | 55–75 | 50–70 | 45–65 | 40–60 | 41–60 | 30–45 |
| | 36–43 | Sandy clay, clay. | SC, CL, CH | A-7 | 0 | 80–95 | 75–90 | 70–85 | 45–65 | 41–60 | 30–45 |
| | 43–70 | Clay | CH | A-7 | 0 | 95–100 | 90–95 | 85–90 | 65–85 | 50–60 | 36–60 |
| **Flemington:** | | | | | | | | | | | |
| FmA, FmB | 0–9 | Loamy sand | SM | A-2-4 | 0 | 95–100 | 95–100 | 65–95 | 15–30 | --- | NP |
| | 9–75 | Clay | CH, MH | A-7 | 0 | 95–100 | 95–100 | 65–95 | 65–85 | 55–100 | 40–65 |
| **Gainesville:** | | | | | | | | | | | |
| GaB, GaC | 0–90 | Loamy sand | SM | A-2-4 | 0 | 97–100 | 95–100 | 85–100 | 13–28 | --- | NP |

TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS—Continued

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| | *In* | | | | *Pct* | | | | | *Pct* | |
| Hague: | | | | | | | | | | | |
| HaB, HaC | 0–24 | Sand | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 75–99 | 5–13 | --- | NP |
| | 24–49 | Sandy clay loam, sandy loam. | SM, SM-SC, SC | A-2, A-4, A-6 | 0 | 100 | 100 | 80–99 | 18–40 | <35 | NP–16 |
| | 49–74 | Sandy loam, loamy sand, loamy fine sand. | SM, SM-SC, SC | A-2, A-4, A-6 | 0 | 100 | 100 | 80–99 | 18–30 | <30 | NP–13 |
| | 74–82 | Loamy sand, loamy fine sand. | SM | A-2-4 | 0 | 100 | 100 | 80–99 | 15–25 | --- | NP |
| [2] HgB: | | | | | | | | | | | |
| Hague part | 0–24 | Sand | SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 75–99 | 5–12 | --- | NP |
| | 24–49 | Sandy clay loam, sandy loam. | SM, SM-SC, SC | A-2, A-4, A-6 | 0 | 100 | 100 | 80–99 | 22–40 | <35 | NP-16 |
| | 49–74 | Sandy loam, loamy sand, loamy fine sand. | SM, SM-SC, SC | A-2, A-4 | 0 | 100 | 100 | 80–99 | 18–30 | <30 | NP–13 |
| | 74–82 | Loamy sand, loamy fine sand. | SM | A-2-4 | 0 | 100 | 100 | 80–99 | 15–25 | --- | NP |
| Urban land part. | | | | | | | | | | | |
| Holopaw: | | | | | | | | | | | |
| Ho | 0–59 | Sand | SP, SP-SM | A-3 | 0 | 100 | 95–100 | 70–95 | 2–10 | --- | NP |
| | 59–72 | Sandy loam, sandy clay loam. | SM, SM-SC | A-2-4 | 0 | 100 | 95–100 | 70–99 | 15–30 | <25 | NP–7 |
| Jumper: | | | | | | | | | | | |
| JuB | 0–29 | Fine sand | SP, SP-SM | A-3 | 0 | 100 | 95–100 | 70–100 | 3–10 | --- | NP |
| | 29–35 | Sandy clay loam, sandy loam. | SM-SC, SC, SM | A-2-4 | 0 | 100 | 95–100 | 80–100 | 20–35 | <30 | NP–10 |
| | 35–69 | Sandy clay loam. | SC, SM-SC | A-2-4, A-4 | 0 | 100 | 95–100 | 80–100 | 25–40 | 20–30 | 4–10 |
| | 69–80 | Stratified loamy sand to clay. | SC, SM-SC | | 0 | 100 | 95–100 | 80–100 | 20–35 | 20–30 | 4–10 |
| Kanapaha: | | | | | | | | | | | |
| KaB | 0–48 | Fine sand | SP-SM | A-3, A-2-4 | 0 | 95–100 | 90–100 | 75–95 | 5–12 | --- | NP |
| | 48–55 | Sandy loam, sandy clay loam, fine sandy loam. | SM-SC, SC | A-2-4 | 0 | 95–100 | 90–100 | 80–95 | 20–35 | 20–30 | 4–10 |
| | 55–70 | Sandy clay loam, sandy clay. | SC, SM-SC | A-2-4, A-2-6, A-4, A-6 | 0 | 95–100 | 90–100 | 80–95 | 25–45 | 19–40 | 6–20 |
| | 70–82 | Sandy clay loam, sandy loam. | SM-SC, SC | A-2-4, A-2-6, A-4, A-6 | 0 | 95–100 | 90–100 | 80–95 | 25–40 | 19–35 | 6–18 |

TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS—Continued

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| | *In* | | | | *Pct* | | | | | *Pct* | |
| Kendrick: | | | | | | | | | | | |
| KeA, KeB, KeC | 0–26 | Loamy sand | SM | A-2-4 | 0 | 95–100 | 90–100 | 75–95 | 15–25 | --- | NP |
| | 26–45 | Sandy clay loam. | SC | A-2-6, A-6 | 0 | 95–100 | 90–100 | 85–95 | 25–40 | 25–35 | 11–18 |
| | 45–79 | Sandy clay loam, sandy clay. | SC | A-2-6, A-6 | 0 | 95–100 | 90–100 | 85–95 | 25–45 | 25–40 | 11–20 |
| | 79–83 | Sandy clay loam, sandy loam. | SC, SM-SC | A-2-6, A-2-4 | 0 | 95–100 | 90–100 | 85–95 | 25–35 | 20–35 | 4–18 |
| Lochloosa: | | | | | | | | | | | |
| LoA, LoB, LoC | 0–28 | Fine sand | SP-SM, SM | A-2-4, A-3 | 0 | 95–100 | 95–100 | 90–98 | 8–20 | --- | NP |
| | 28–32 | Fine sandy loam, sandy loam, loamy sand. | SM, SM-SC | A-2-4 | 0 | 95–100 | 95–100 | 90–98 | 18–30 | <28 | NP–6 |
| | 32–57 | Sandy clay loam, sandy loam. | SC, SM-SC | A-2, A-4, A-6 | 0 | 95–100 | 95–100 | 90–98 | 25–40 | 25–40 | 5–18 |
| | 57–69 | Sandy clay, sandy clay loam. | SC | A-6, A-7 | 0 | 95–100 | 95–100 | 90–98 | 40–50 | 35–45 | 15–25 |
| | 69–75 | Sandy clay loam, sandy loam. | SC, SM-SC | A-2, A-4, A-6 | 0 | 95–100 | 95–100 | 90–98 | 25–40 | 25–40 | 5–18 |
| Lynne: | | | | | | | | | | | |
| Ly | 0–6 | Sand | SP, SP-SM | A-3 | 0 | 100 | 100 | 90–100 | 3–10 | --- | NP |
| | 6–20 | Sand, fine sand | SP, SP-SM | A-3 | 0 | 100 | 100 | 90–100 | 3–10 | --- | NP |
| | 20–31 | Sand, fine sand, loamy sand. | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 90–100 | 8–20 | --- | NP |
| | 31–33 | Sand, fine sand | SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 90–100 | 5–12 | --- | NP |
| | 33–38 | Sandy clay, sandy clay loam. | SC, CH, CL | A-6, A-7 | 0 | 100 | 100 | 90–100 | 36–60 | 36–60 | 18–40 |
| | 38–67 | Sandy clay | SC, CH, CL | A-6, A-7 | 0 | 100 | 100 | 90–100 | 45–60 | 35–60 | 20–40 |
| Martel: | | | | | | | | | | | |
| Ma | 0–19 | Sandy clay loam. | SC, CL | A-4, A-6 | 0 | 100 | 95–100 | 90–100 | 36–55 | 25–40 | 8–20 |
| | 19–72 | Sandy clay, clay. | CL, CH | A-7 | 0 | 95–100 | 100 | 90–100 | 51–70 | 41–60 | 30–45 |
| Micanopy: | | | | | | | | | | | |
| McB, McC | 0–15 | Fine sand | SM, SP-SM | A-2-4 | 0 | 95–100 | 95–100 | 90–100 | 11–25 | --- | NP |
| | 15–20 | Sandy clay, sandy clay loam. | SC | A-2, A-6, A-7 | 0 | 95–100 | 95–100 | 90–100 | 30–50 | 25–45 | 12–25 |
| | 20–26 | Sandy clay | CH | A-7 | 0 | 95–100 | 95–100 | 90–100 | 51–65 | 51–65 | 25–35 |
| | 26–57 | Sandy clay, clay. | CH, MH | A-7 | 0 | 95–100 | 95–100 | 90–100 | 51–70 | 51–75 | 25–45 |
| | 57–68 | Sandy clay, sandy clay loam. | CH, MH, SC | A-7 | 0 | 95–100 | 95–100 | 90–100 | 45–55 | 51–70 | 25–42 |
| Okeechobee: | | | | | | | | | | | |
| Ok | 0–32 | Muck | Pt | --- | 0 | --- | --- | --- | --- | --- | NP |
| | 32–65 | Mucky peat | Pt | --- | 0 | --- | --- | --- | --- | --- | NP |
| Paisley: | | | | | | | | | | | |
| Pa | 0–9 | Loamy fine sand. | SM | A-2-4 | 0 | 100 | 100 | 80–99 | 13–25 | --- | NP |
| | 9–80 | Sandy clay, clay. | CH, CL | A-7 | 0 | 95–100 | 90–100 | 75–95 | 51–70 | 41–51 | 30–40 |

## TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS—Continued

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| | *In* | | | | *Pct* | | | | | *Pct* | |
| Pamlico: | | | | | | | | | | | |
| [2]PB: | | | | | | | | | | | |
| Pamlico part | 0–31 | Muck | Pt | --- | 0 | --- | --- | --- | --- | --- | --- |
| | 31–49 | Sand | SP-SM | A-2-4, A-3 | 0 | 100 | 100 | 70–95 | 5–12 | --- | NP |
| | 49–60 | Sandy clay loam, sandy clay. | SC, CL, CH | A-6, A-7 | 0 | 100 | 95–100 | 85–100 | 40–60 | 35–55 | 20–40 |
| Martel variant part | 11–0 | Muck | Pt | --- | 0 | --- | --- | --- | --- | --- | NP |
| | 0–16 | Sand, loamy sand. | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 95–100 | 85–100 | 8–20 | --- | NP |
| | 16–31 | Sand | SP-SM | A-3, A-2-4 | 0 | 100 | 95–100 | 85–100 | 5–12 | --- | NP |
| | 31–62 | Sandy clay loam, sandy clay. | SC, CL, CH | A-6, A-7 | 0 | 100 | 95–100 | 85–100 | 40–60 | 35–55 | 20–40 |
| Pedro: | | | | | | | | | | | |
| [2]PeB: | | | | | | | | | | | |
| Pedro part | 0–13 | Fine sand | SP-SM | A-3, A-2-4 | 0–1 | 100 | 95–100 | 90–100 | 5–12 | --- | NP |
| | 13–16 | Sandy clay loam. | SC | A-2, A-4, A-6 | 0–1 | 90–100 | 85–100 | 80–100 | 25–40 | 25–35 | 8–16 |
| Arredondo part | 0–65 | Fine sand | SP-SM, SM | A-2-4, A-3 | 0 | 95–100 | 90–100 | 75–95 | 5–15 | --- | NP |
| | 65–70 | Loamy sand, loamy fine sand, sandy loam. | SM, SM-SC | A-2-4 | 0 | 95–100 | 90–100 | 75–95 | 13–25 | <25 | NP–7 |
| | 70–90 | Sandy loam, fine sandy loam, sandy clay loam. | SC, SM-SC | A-2-4, A-2-6, A-4, A-6 | 0 | 95–100 | 90–100 | 85–95 | 20–40 | 21–40 | 4–20 |
| Placid: | | | | | | | | | | | |
| Pm | 0–19 | Sand | SP, SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 90–100 | 1–20 | --- | NP |
| | 19–92 | Fine sand, sand, loamy fine sand. | SP, SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 90–100 | 1–20 | --- | NP |
| [2]Pn: | | | | | | | | | | | |
| Placid part | 0–19 | Sand | SP, SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 90–100 | 1–20 | --- | NP |
| | 19–92 | Fine sand, sand, loamy fine sand. | SP, SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 90–100 | 1–20 | --- | NP |
| Pompano part | 0–80 | Sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 75–100 | 1–12 | --- | NP |
| Pomona part | 0–26 | Sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 85–100 | 2–12 | --- | NP |
| | 26–39 | Sand, fine sand | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 85–100 | 5–15 | --- | NP |
| | 39–51 | Sand, fine sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 85–100 | 2–12 | --- | NP |
| | 51–72 | Sandy clay loam, sandy loam, sandy clay. | SC, SM-SC | A-2, A-4, A-6 | 0 | 100 | 95–100 | 85–100 | 25–50 | 25–40 | 4–20 |

## TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS—Continued

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| | *In* | | | | *Pct* | | | | | *Pct* | |
| Pomona: | | | | | | | | | | | |
| Po | 0–26 | Sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 85–100 | 2–12 | --- | NP |
| | 26–39 | Sand, fine sand | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 85–100 | 5–15 | --- | NP |
| | 39–51 | Sand, fine sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 85–100 | 2–12 | --- | NP |
| | 51–72 | Sandy clay loam, sandy loam, sandy clay. | SC, SM-SC | A-2, A-4, A-6 | 0 | 100 | 95–100 | 85–100 | 25–50 | 25–40 | 4–20 |
| Pompano: | | | | | | | | | | | |
| Pp, Pr | 0–80 | Sand | SP, SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 75–100 | 1–12 | --- | NP |
| Sparr: | | | | | | | | | | | |
| SpB, SpC | 0–48 | Fine sand | SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 75–95 | 5–12 | --- | NP |
| | 48–56 | Sandy loam, sandy clay loam. | SM-SC, SC, SM | A-2-4 | 0 | 100 | 100 | 75–95 | 25–35 | <30 | NP–10 |
| | 56–72 | Sandy clay, sandy clay loam, sandy loam. | SC, SM-SC | A-2-4, A-2-6, A-4, A-6 | 0 | 100 | 95–100 | 75–95 | 30–50 | 22–40 | 5–15 |
| | 72–99 | Sandy clay loam, sandy loam. | SC, SM-SC, SM | A-2-4, A-2-6, A-4, A-6 | 0 | 100 | 95–100 | 75–95 | 25–40 | <35 | NP–12 |
| [1] SuB: | | | | | | | | | | | |
| Sparr part | 0–48 | Fine sand | SP-SM | A-3, A-2-4 | 0 | 100 | 100 | 75–95 | 5–12 | --- | NP |
| | 48–56 | Sandy loam, sandy clay loam. | SM-SC, SC, SM | A-2-4 | 0 | 100 | 100 | 75–95 | 25–35 | <30 | NP–10 |
| | 56–72 | Sandy clay, sandy clay loam, sandy loam. | SC, SM-SC | A-2-4, A-2-6, A-4, A-6 | 0 | 100 | 95–100 | 75–95 | 30–50 | 22–40 | 5–15 |
| | 72–99 | Sandy clay loam, sandy loam. | SC, SM-SC, SM | A-2-4, A-2-6, A-4, A-6 | 0 | 100 | 95–100 | 75–95 | 25–40 | <35 | NP–12 |
| Urban land part. | | | | | | | | | | | |
| Tavares: | | | | | | | | | | | |
| TaB | 0–85 | Sand | SP, SP-SM | A-3 | 0 | 100 | 95–100 | 85–100 | 2–8 | --- | NP |
| Terra Ceia: | | | | | | | | | | | |
| Tc | 0–61 | Muck | Pt | --- | 0 | --- | --- | --- | --- | --- | NP |
| | 61–68 | Mucky peat | Pt | --- | 0 | --- | --- | --- | --- | --- | NP |
| Terra Ceia variant | | | | | | | | | | | |
| Te | 0–65 | Muck | Pt | --- | 0 | --- | --- | --- | --- | --- | NP |
| Tomoka: | | | | | | | | | | | |
| To | 0–32 | Muck | Pt | --- | 0 | --- | --- | --- | --- | --- | NP |
| | 32–43 | Sand, fine sand, loamy sand. | SP-SM, SM | A-3, A-2-4 | 0 | 100 | 100 | 80–95 | 5–15 | --- | NP |
| | 43–60 | Sandy clay loam, sandy loam, fine sandy loam. | SM, SM-SC, SC | A-2, A-4, A-6 | 0 | 100 | 100 | 80–95 | 25–40 | <35 | NP–15 |

TABLE 8.—ENGINEERING PROPERTIES AND CLASSIFICATIONS—Continued

| Soil name and map symbol | Depth | USDA texture | Classification | | Fragments > 3 inches | Percentage passing sieve number— | | | | Liquid limit | Plasticity index |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Unified | AASHTO | | 4 | 10 | 40 | 200 | | |
| | *In* | | | | *Pct* | | | | | *Pct* | |
| Udalfic Arents: | | | | | | | | | | | |
| UaA | 0–33 | Mixture of sandy clay loam, sandy clay, sandy loam. | SM-SC, SC | A-2, A-4, A-6, A-7 | 0–5 | 90–95 | 85–90 | 80–90 | 25–45 | 25–50 | 4–25 |
| | 33–65 | Fine sand | SP-SM | A-3 | 0 | 100 | 100 | 90–100 | 5–10 | --- | NP |
| UaF | 0–90 | Mixture of sandy loam, sandy clay loam, sandy clay. | SM-SC, SC | A-2, A-4, A-6, A-7 | 0–5 | 80–90 | 65–90 | 70–80 | 25–45 | 25–50 | 4–25 |
| Urban land: Ur. | | | | | | | | | | | |
| Wacahoota: | | | | | | | | | | | |
| WaC | 0–29 | Loamy sand | SP-SM, SM | A-1-B, A-3, A-2-4 | 0–5 | 80–98 | 65–95 | 40–85 | 8–25 | --- | NP |
| | 29–78 | Sandy clay loam, sandy clay. | SC | A-6, A-2-6 | 0–5 | 80–98 | 65–95 | 55–85 | 30–45 | 25–40 | 11–20 |
| Wacahoota variant: | | | | | | | | | | | |
| WgB, WgC | 0–31 | Gravelly sand | GP-GM, SP-SM | A-1, A-3, A-2-4 | 0–10 | 35–75 | 25–65 | 20–60 | 5–12 | --- | NP |
| | 31–36 | Gravelly sandy loam. | GM, GM-GC, SM, SM-SC | A-1 | 0–10 | 30–65 | 25–50 | 20–45 | 15–25 | <28 | NP–7 |
| | 36–72 | Gravelly sandy clay loam, gravelly sandy loam. | GC, SC | A-2-4, A-2-6 | 0–10 | 35–60 | 30–50 | 25–45 | 20–35 | 25–40 | 8–20 |
| | 72–78 | Sandy clay loam, sandy clay. | SC | A-2-6, A-6, A-7 | 0 | 95–100 | 95–100 | 80–95 | 30–45 | 30–50 | 11–30 |
| Zuber: | | | | | | | | | | | |
| ZuA, ZuB, ZuC | 0–7 | Loamy sand | SM | A-2-4 | 0 | 95–100 | 90–100 | 75–95 | 15–25 | --- | NP |
| | 7–15 | Loamy sand, loamy fine sand. | SM | A-2-4 | 0 | 95–100 | 90–100 | 75–95 | 15–25 | --- | NP |
| | 15–20 | Sandy clay loam, sandy clay. | SC | A-2-6, A-6 | 0 | 95–100 | 90–100 | 75–95 | 30–45 | 20–40 | 11–20 |
| | 20–70 | Sandy clay, clay. | SC, CL, CH | A-6, A-7 | 0 | 90–100 | 85–100 | 75–90 | 45–75 | 30–60 | 18–45 |
| | 70–82 | Sandy clay loam, sandy clay, clay. | SC, CL, CH | A-6, A-7 | 0–5 | 85–95 | 75–90 | 70–85 | 36–90 | 30–70 | 15–50 |

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[1] Nonplastic.

[2] This mappng unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

## TABLE 9.—PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The erosion tolerance factor (T) is for the entire profile. Dashes in the erosion factor columns indicate poorly drained and very poorly drained soils where the slope is mostly less than 2 percent and water erosion is no problem. Dashes in other columns indicate that data were not available. Absence of an entry means that data were not estimated. The symbol < means less than; > means more than]

| Soil name and map symbol | Depth | Permeability | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Risk of corrosion | | Erosion factors | | Wind erodibility group |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Uncoated steel | Concrete | K | T | |
| | *In* | *In/hr* | *In/in* | *pH* | *Mmhos/cm* | | | | | | |
| Adamsville: | | | | | | | | | | | |
| AdB | 0–88 | 6.0–20 | 0.05–0.10 | 4.5–6.0 | <2 | Low | Low | Moderate | --- | --- | 2 |
| Anclote: | | | | | | | | | | | |
| Ae | 0–20 | 6.0–20 | 0.10–0.15 | 5.6–6.5 | <2 | Low | Moderate | Moderate | --- | --- | --- |
| | 20–80 | 6.0–20 | 0.03–0.10 | 6.1–7.3 | <2 | Low | Moderate | Low | --- | | |
| [1] AN: | | | | | | | | | | | |
| Anclote part | 0–20 | 6.0–20 | 0.10–0.15 | 5.6–6.5 | <2 | Low | Moderate | Moderate | --- | --- | --- |
| | 20–80 | 6.0–20 | 0.03–0.10 | 6.1–7.3 | <2 | Low | Moderate | Low | --- | | |
| Tomoka part | 0–32 | 6.0–20 | 0.30–0.50 | 5.1–6.5 | <2 | Low | High | High | --- | --- | 2 |
| | 32–43 | 6.0–20 | 0.05–0.10 | 5.1–6.5 | <2 | Low | High | High | --- | | |
| | 43–60 | 0.6–6.0 | 0.10–0.15 | 5.6–6.5 | <2 | Low | High | High | --- | | |
| Apopka: | | | | | | | | | | | |
| ApB, ApC | 0–55 | 6.0–20 | 0.03–0.05 | 4.5–6.0 | <2 | Low | Low | High | 0.17 | 5 | 2 |
| | 55–81 | 0.6–2.0 | 0.12–0.17 | 4.5–6.0 | <2 | Low | Moderate | High | 0.28 | | |
| Arredondo: | | | | | | | | | | | |
| ArB, ArC | 0–65 | 6.0–20 | 0.05–0.08 | 4.5–6.0 | <2 | Low | Low | High | 0.15 | 5 | 2 |
| | 65–70 | 2.0–6.0 | 0.10–0.15 | 4.5–6.0 | <2 | Low | Low | High | 0.24 | | |
| | 70–90 | 2.0–6.0 | 0.12–0.17 | 4.5–6.0 | <2 | Low | Moderate | High | 0.37 | | |
| [1] AsB: | | | | | | | | | | | |
| Arredondo part | 0–65 | 6.0–20 | 0.05–0.08 | 4.5–6.0 | <2 | Low | Low | High | 0.15 | 5 | 2 |
| | 65–70 | 2.0–6.0 | 0.10–0.15 | 4.5–6.0 | <2 | Low | Low | High | --- | | |
| | 70–90 | 2.0–6.0 | 0.12–0.17 | 4.5–6.0 | <2 | Low | Moderate | High | --- | | |
| Urban land part. | | | | | | | | | | | |
| Astatula: | | | | | | | | | | | |
| AtB, AtC | 0–92 | >20 | 0.02–0.05 | 4.5–6.0 | <2 | Low | Low | High | 0.15 | 5 | 2 |
| Blichton: | | | | | | | | | | | |
| BcA, BcB | 0–26 | 6.0–20 | 0.05–0.10 | 4.5–6.0 | <2 | Low | High | High | 0.20 | 5 | --- |
| | 26–30 | 2.0–6.0 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.24 | | |
| | 30–77 | 0.6–2.0 | 0.10–0.15 | 4.5–5.5 | <2 | Moderate | High | High | 0.37 | | |
| | 77–81 | 2.0–6.0 | 0.08–0.12 | 4.5–5.5 | <2 | Low | High | High | --- | | |
| [1] BdB: | | | | | | | | | | | |
| Blichton part | 0–26 | 6.0–20 | 0.05–0.10 | 4.5–6.0 | <2 | Low | High | High | 0.20 | 5 | --- |
| | 26–30 | 2.0–6.0 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | --- | | |
| | 30–77 | 0.6–2.0 | 0.10–0.15 | 4.5–5.5 | <2 | Moderate | High | High | --- | | |
| | 77–81 | 2.0–6.0 | 0.08–0.12 | 4.5–5.5 | <2 | Low | High | High | --- | | |
| Urban land part. | | | | | | | | | | | |
| Bluff: | | | | | | | | | | | |
| Bf | 0–13 | 0.2–0.6 | 0.18–0.20 | 5.1–7.3 | <2 | Moderate | High | Low | --- | --- | --- |
| | 13–29 | 0.06–0.2 | 0.12–0.17 | 6.1–8.4 | <2 | High | Moderate | Low | --- | | |
| | 29–38 | 0.06–0.2 | 0.12–0.17 | 6.1–8.4 | <2 | High | Moderate | Low | --- | | |
| | 38–60 | 0.06–0.2 | 0.12–0.17 | 7.4–8.4 | <2 | High | Moderate | Low | --- | | |
| Boardman: | | | | | | | | | | | |
| BoC, BoD | 0–16 | 6.0–20 | 0.05–0.10 | 4.5–5.5 | <2 | Low | High | High | 0.24 | 4 | --- |
| | 16–22 | 0.6–2.0 | 0.07–0.12 | 4.5–5.5 | <2 | Low | High | High | 0.32 | | |
| | 22–34 | 0.2–0.6 | 0.12–0.15 | 4.5–5.5 | <2 | Moderate | High | High | 0.37 | | |
| | 34–45 | 0.06–0.2 | 0.13–0.17 | 4.5–5.5 | <2 | High | High | High | 0.32 | | |
| | 45–56 | 0.06–0.2 | 0.15–0.18 | 4.5–5.5 | <2 | High | High | High | 0.32 | | |
| | 56–68 | 0.06–0.2 | 0.15–0.18 | 4.5–5.5 | <2 | High | High | High | 0.32 | | |

## TABLE 9.—PHYSICAL AND CHEMICAL PROPERTIES OF SOILS—Continued

| Soil name and map symbol | Depth | Permeability | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Risk of corrosion | | Erosion factors | | Wind erodibility group |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Uncoated steel | Concrete | K | T | |
| | *In* | *In/hr* | *In/in* | *pH* | *Mmhos/cm* | | | | | | |
| Borrow pits: | | | | | | | | | | | |
| Bp. | | | | | | | | | | | |
| Candler: | | | | | | | | | | | |
| CaB, CaC | 0–67 | >20 | 0.02–0.05 | 4.5–6.0 | <2 | Low | Low | High | 0.10 | 5 | 2 |
| | 67–99 | 6.0–20 | 0.05–0.08 | 4.5–6.0 | <2 | Low | Low | High | 0.10 | | |
| CwA | 0–17 | 0.06–0.2 | 0.15–0.20 | 4.5–6.0 | <2 | High | High | Moderate | 0.32 | 5 | --- |
| | 17–78 | >20 | 0.02–0.05 | 4.5–6.0 | <2 | Low | Low | High | 0.17 | | |
| Eaton: | | | | | | | | | | | |
| Ea | 0–30 | 6.0–20 | 0.05–0.08 | 4.5–5.5 | <2 | Low | High | High | --- | --- | --- |
| | 30–33 | 0.06–0.2 | 0.12–0.17 | 4.5–6.0 | <2 | Moderate | High | Moderate | --- | | |
| | 33–78 | 0.06–0.2 | 0.12–0.17 | 4.5–6.0 | <2 | Moderate | High | Moderate | --- | | |
| | 78–92 | 0.2–0.6 | 0.10–0.14 | 4.5–6.0 | <2 | Moderate | High | Moderate | --- | | |
| Electra: | | | | | | | | | | | |
| EcB | 0–41 | 6.0–20 | 0.02–0.07 | 3.6–5.5 | <2 | Low | Low | High | 0.15 | 5 | 2 |
| | 41–50 | 0.6–2.0 | 0.10–0.15 | 3.6–5.5 | <2 | Low | Low | High | 0.20 | --- | |
| | 50–54 | 6.0–20 | 0.07–0.10 | 3.6–5.5 | <2 | Low | Low | High | 0.20 | | |
| | 54–72 | 0.2–0.6 | 0.10–0.15 | 3.6–5.5 | <2 | Low | High | High | 0.32 | | |
| Eureka: | | | | | | | | | | | |
| Er, Es | 0–13 | 6.0–20 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | --- | --- | --- |
| | 13–81 | <0.2 | 0.15–0.20 | 4.5–5.5 | <2 | High | High | High | --- | | |
| Fellowship: | | | | | | | | | | | |
| FeB, FeC | 0–11 | 2.0–6.0 | 0.07–0.12 | 4.5–6.0 | <2 | Low | High | High | 0.28 | 4 | --- |
| | 11–18 | 0.6–2.0 | 0.10–0.14 | 4.5–6.0 | <2 | Low | High | High | 0.37 | | |
| | 18–25 | 0.06–0.2 | 0.15–0.20 | 4.5–6.0 | <2 | Moderate | High | High | 0.37 | | |
| | 25–42 | >0.06 | 0.15–0.20 | 4.5–6.0 | <2 | High | High | High | 0.37 | | |
| | 42–83 | >0.06 | 0.15–0.20 | 4.5–6.0 | <2 | High | High | High | 0.37 | | |
| Fellowship variant: | | | | | | | | | | | |
| FgB, FgC | 0–14 | 2.0–6.0 | 0.02–0.05 | 4.5–6.0 | <2 | Low | High | High | 0.28 | 4 | --- |
| | 14–20 | 0.2–0.6 | 0.05–0.07 | 4.5–6.0 | <2 | Moderate | High | High | 0.37 | | |
| | 20–36 | <0.06 | 0.06–0.09 | 4.5–6.0 | <2 | High | High | High | 0.37 | | |
| | 36–43 | <0.06 | 0.13–0.17 | 4.5–6.0 | <2 | High | High | High | 0.37 | | |
| | 43–70 | <0.06 | 0.13–0.17 | 4.5–6.0 | <2 | High | High | High | 0.37 | | |
| Flemington: | | | | | | | | | | | |
| FmA, FmB | 0–9 | 2.0–20 | 0.08–0.13 | 3.6–6.0 | <2 | Low | High | High | 0.32 | 5 | --- |
| | 9–27 | <0.06 | 0.12–0.15 | 3.6–5.5 | <2 | High | High | High | 0.37 | | |
| | 27–53 | <0.06 | 0.12–0.18 | 3.6–5.5 | <2 | High | High | High | --- | | |
| | 53–75 | <0.06 | 0.15–0.18 | 3.6–5.5 | <2 | High | High | High | --- | | |
| Gainesville: | | | | | | | | | | | |
| GaB, GaC | 0–90 | 6.0–20 | 0.07–0.10 | 4.5–6.0 | <2 | Low | Low | High | 0.17 | 5 | 2 |
| Hague: | | | | | | | | | | | |
| HaB, HaC | 0–24 | 6.0–20 | 0.05–0.08 | 4.5–6.0 | <2 | Low | Low | High | 0.15 | 5 | 2 |
| | 24–49 | 0.6–6.0 | 0.12–0.17 | 4.5–6.0 | <2 | Low | Low | Moderate | 0.32 | | |
| | 49–74 | 0.6–2.0 | 0.10–0.14 | 4.5–6.0 | <2 | Low | Low | Moderate | 0.24 | | |
| | 74–82 | 2.0–6.0 | 0.06–0.10 | 5.1–6.5 | <2 | Low | Low | Moderate | 0.17 | | |
| [1] HgB: | | | | | | | | | | | |
| Hague part | 0–24 | 6.0–20 | 0.05–0.08 | 4.5–6.0 | <2 | Low | Low | High | 0.15 | 5 | 2 |
| | 24–49 | 0.6–6.0 | 0.12–0.17 | 4.5–6.0 | <2 | Low | Low | Moderate | 0.32 | | |
| | 49–74 | 0.6–2.0 | 0.10–0.14 | 4.5–6.0 | <2 | Low | Low | Moderate | 0.24 | | |
| | 74–82 | 2.0–6.0 | 0.06–0.10 | 5.1–6.5 | <2 | Low | Low | Moderate | 0.17 | | |
| Urban land part. | | | | | | | | | | | |
| Holopaw: | | | | | | | | | | | |
| Ho | 0–59 | 6.0–20 | 0.03–0.07 | 5.1–7.3 | <2 | Low | High | Moderate | --- | --- | --- |
| | 59–72 | 2.0–6.0 | 0.10–0.15 | 6.1–8.4 | <2 | Low | High | Low | --- | | |

TABLE 9.—PHYSICAL AND CHEMICAL PROPERTIES OF SOILS—Continued

| Soil name and map symbol | Depth | Permeability | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Risk of corrosion | | Erosion factors | | Wind erodibility group |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Uncoated steel | Concrete | K | T | |
| | *In* | *In/hr* | *In/in* | *pH* | *Mmhos/cm* | | | | | | |
| **Jumper:** | | | | | | | | | | | |
| **JuB** | 0–29 | 6.0–20 | 0.03–0.08 | 4.5–5.5 | <2 | Low | Low | High | 0.20 | 5 | 2 |
| | 29–35 | 2.0–6.0 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.32 | | |
| | 35–69 | 0.6–2.0 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.32 | | |
| | 69–80 | 0.6–2.0 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.32 | | |
| **Kanapaha:** | | | | | | | | | | | |
| **KaB** | 0–48 | 6.0–20 | 0.03–0.08 | 4.5–5.5 | <2 | Very low | High | High | 0.15 | 5 | 2 |
| | 48–55 | 0.6–2.0 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.24 | | |
| | 55–70 | 0.2–0.6 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.32 | | |
| | 70–80 | 0.2–0.6 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | --- | | |
| **Kendrick:** | | | | | | | | | | | |
| **KeA, KeB, KeC** | 0–26 | 6.0–20 | 0.08–0.10 | 4.5–5.5 | <2 | Low | Low | High | 0.20 | 5 | 2 |
| | 26–79 | 0.6–2.0 | 0.12–0.17 | 4.5–5.5 | <2 | Low | Moderate | Moderate | 0.32 | | |
| | 79–80 | 0.6–2.0 | 0.12–0.15 | 4.5–5.5 | <2 | Low | Moderate | Moderate | 0.32 | | |
| **Lochloosa:** | | | | | | | | | | | |
| **LoA, LoB, LoC** | 0–28 | 6.0–20 | 0.05–0.10 | 4.5–5.5 | <2 | Low | Moderate | High | 0.20 | 5 | 2 |
| | 28–32 | 2.0–6.0 | 0.10–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.24 | | |
| | 32–57 | 0.6–2.0 | 0.12–0.15 | 4.5–5.5 | <2 | Low | High | High | 0.32 | | |
| | 57–69 | 0.6–2.0 | 0.13–0.18 | 4.5–5.5 | <2 | Low | High | High | 0.28 | | |
| | 69–75 | 0.6–2.0 | 0.12–0.15 | 4.5–5.5 | <2 | Low | High | High | --- | | |
| **Lynne:** | | | | | | | | | | | |
| **Ly** | 0–6 | 6.0–20 | 0.08–0.15 | 3.6–5.5 | <2 | Low | High | High | --- | --- | 2 |
| | 6–20 | 6.0–20 | 0.03–0.08 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 20–31 | 0.6–2.0 | 0.10–0.15 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 31–33 | 6.0–20 | 0.05–0.10 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 33–38 | 0.2–2.0 | 0.13–0.17 | 3.6–5.5 | <2 | Moderate | High | High | --- | | |
| | 38–67 | 0.2–0.6 | 0.13–0.17 | 3.6–5.5 | <2 | Moderate | High | High | --- | | |
| **Martel:** | | | | | | | | | | | |
| **Ma** | 0–19 | 0.6–2.0 | 0.15–0.20 | 4.5–5.5 | <2 | Moderate | Moderate | High | --- | --- | --- |
| | 19–72 | <0.06 | 0.13–0.18 | 4.5–5.5 | <2 | High | Moderate | High | --- | | |
| **Micanopy:** | | | | | | | | | | | |
| **McB, McC** | 0–15 | 6.0–20 | 0.06–0.10 | 4.5–5.5 | <2 | Low | Low | High | 0.20 | 5 | --- |
| | 15–20 | 0.6–2.0 | 0.12–0.15 | 4.5–5.5 | <2 | Moderate | High | High | 0.32 | | |
| | 20–26 | 0.06–0.2 | 0.15–0.18 | 4.5–5.5 | <2 | High | High | High | 0.28 | | |
| | 26–57 | 0.06–0.2 | 0.15–0.18 | 4.5–5.5 | <2 | High | High | High | 0.28 | | |
| | 57–68 | 0.06–0.2 | 0.12–0.15 | 4.5–5.5 | <2 | High | High | High | 0.32 | | |
| **Okeechobee:** | | | | | | | | | | | |
| **Ok** | 0–32 | 6.0–20 | 0.30–0.50 | 5.6–8.4 | <2 | Very low | High | Low | --- | --- | 2 |
| | 32–65 | 6.0–20 | 0.45–0.65 | 5.6–8.4 | <2 | Very low | High | Low | --- | | |
| **Paisley:** | | | | | | | | | | | |
| **Pa** | 0–9 | 6.0–20 | 0.06–0.10 | 5.6–6.5 | <2 | Low | High | Moderate | --- | --- | --- |
| | 9–80 | 0.06–0.2 | 0.15–0.18 | 6.1–8.4 | <2 | High | High | Low | --- | | |
| **Pamlico:** | | | | | | | | | | | |
| [1]**PB:** | | | | | | | | | | | |
| **Pamlico part** | 0–31 | 0.6–2.0 | 0.25–0.30 | 3.6–5.0 | <2 | Low | High | High | --- | --- | 2 |
| | 31–49 | 6.0–20 | 0.05–0.08 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 49–60 | 0.06–0.6 | 0.10–0.15 | 3.6–5.5 | <2 | Moderate | Moderate | High | --- | | |
| **Martel variant part** | 11–0 | 6.0–20 | 0.30–0.35 | 3.6–5.5 | <2 | | Moderate | High | --- | --- | --- |
| | 0–16 | 6.0–20 | 0.15–0.20 | 3.6–5.5 | <2 | Very low | Moderate | High | --- | | |
| | 16–31 | 6.0–20 | 0.05–0.08 | 3.6–5.5 | <2 | Very low | Moderate | High | --- | | |
| | 31–62 | 0.06–0.6 | 0.10–0.15 | 3.6–5.5 | <2 | Moderate | Moderate | High | --- | | |
| **Pedro:** | | | | | | | | | | | |
| [1]**PeB:** | | | | | | | | | | | |
| **Pedro part** | 0–13 | 6.0–20 | 0.03–0.08 | 5.1–6.5 | <2 | Low | Low | Moderate | 0.17 | 1 | 2 |
| | 13–16 | 2.0–6.0 | 0.12–0.15 | 6.1–7.8 | <2 | Low | Moderate | Low | 0.28 | | |
| **Arredondo part** | 0–65 | 6.0–20 | 0.05–0.08 | 4.5–6.0 | <2 | Low | Low | High | 0.15 | 5 | 2 |
| | 65–70 | 2.0–6.0 | 0.10–0.15 | 4.5–6.0 | <2 | Low | Low | High | 0.24 | | |
| | 70–90 | 2.0–6.0 | 0.12–0.17 | 4.5–6.0 | <2 | Low | Moderate | High | 0.37 | | |

TABLE 9.—PHYSICAL AND CHEMICAL PROPERTIES OF SOILS—Continued

| Soil name and map symbol | Depth | Permeability | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Risk of corrosion | | Erosion factors | | Wind erodibility group |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Uncoated steel | Concrete | K | T | |
| | *In* | *In/hr* | *In/in* | *pH* | *Mmhos/cm* | | | | | | |
| Placid: | | | | | | | | | | | |
| Pm | 0–19 | 6.0–20 | 0.15–0.20 | 3.6–5.5 | <2 | Very low | High | High | --- | --- | --- |
| | 19–92 | 6.0–20 | 0.05–0.08 | 3.6–5.5 | <2 | Very low | High | High | --- | | |
| [1] Pn: | | | | | | | | | | | |
| Placid part | 0–19 | 6.0–20 | 0.15–0.20 | 3.6–5.5 | <2 | Very low | High | High | --- | --- | --- |
| | 19–92 | 6.0–20 | 0.05–0.08 | 3.6–5.5 | <2 | Very low | High | High | --- | | |
| Pompano part | 0–80 | >20 | 0.02–0.05 | 4.5–7.8 | <2 | Low | High | Moderate | --- | --- | --- |
| Pomona part | 0–26 | 6.0–20 | 0.03–0.08 | 3.6–5.5 | <2 | Low | High | High | --- | --- | 2 |
| | 26–39 | 0.6–2.0 | 0.10–0.15 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 39–51 | 6.0–20 | 0.03–0.08 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 51–72 | 0.2–0.6 | 0.13–0.17 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| Pomona: | | | | | | | | | | | |
| Po | 0–26 | 6.0–20 | 0.03–0.08 | 3.6–5.5 | <2 | Low | High | High | --- | --- | 2 |
| | 26–39 | 0.6–2.0 | 0.10–0.15 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 39–51 | 6.0–20 | 0.03–0.08 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| | 51–72 | 0.2–0.6 | 0.13–0.17 | 3.6–5.5 | <2 | Low | High | High | --- | | |
| Pompano: | | | | | | | | | | | |
| Pp, Pr | 0–80 | >20 | 0.02–0.05 | 4.5–6.5 | <2 | Low | High | Moderate | --- | --- | --- |
| Sparr: | | | | | | | | | | | |
| SpB, SpC | 0–48 | 6.0–20 | 0.05–0.08 | 4.5–5.5 | <2 | Low | Low | High | 0.10 | 5 | 2 |
| | 48–56 | 0.6–2.0 | 0.11–0.15 | 4.5–5.5 | <2 | Low | Moderate | High | 0.24 | | |
| | 56–72 | 0.6–2.0 | 0.15–0.18 | 4.5–5.5 | <2 | Low | Moderate | High | 0.37 | | |
| | 72–80 | 0.6–2.0 | 0.11–0.15 | 4.5–5.5 | <2 | Low | Moderate | High | 0.37 | | |
| [1] SuB: | | | | | | | | | | | |
| Sparr part | 0–48 | 6.0–20 | 0.05–0.08 | 4.5–5.5 | <2 | Low | Low | High | 0.10 | 5 | 2 |
| | 48–56 | 0.6–2.0 | 0.11–0.15 | 4.5–5.5 | <2 | Low | Moderate | High | 0.24 | | |
| | 56–72 | 0.6–2.0 | 0.15–0.18 | 4.5–5.5 | <2 | Low | Moderate | High | 0.37 | | |
| | 72–80 | 0.6–2.0 | 0.11–0.15 | 4.5–5.5 | <2 | Low | Moderate | High | 0.37 | | |
| Urban land part. | | | | | | | | | | | |
| Tavares: | | | | | | | | | | | |
| TaB | 0–85 | >20 | 0.02–0.05 | 4.5–5.5 | <2 | Low | Low | High | 0.17 | 5 | 2 |
| Terra Ceia: | | | | | | | | | | | |
| Tc | 0–68 | 6.0–20 | 0.30–0.50 | 5.6–8.4 | <2 | Low | High | Moderate | --- | --- | 2 |
| Terra Ceia variant: | | | | | | | | | | | |
| Te | 0–65 | 6.0–20 | 0.30–0.50 | 3.6–5.5 | <2 | Low | High | High | --- | --- | 2 |
| Tomoka: | | | | | | | | | | | |
| To | 0–32 | 6.0–20 | 0.30–0.50 | 5.1–6.5 | <2 | Low | High | High | --- | --- | 2 |
| | 32–43 | 6.0–20 | 0.05–0.10 | 5.1–6.5 | <2 | Low | High | High | --- | | |
| | 43–60 | 0.6–6.0 | 0.10–0.15 | 5.6–6.5 | <2 | Low | High | High | --- | | |
| Udalfic Arents: | | | | | | | | | | | |
| UaA | 0–33 | 0.6–20 | 0.08–0.12 | 5.1–7.3 | <2 | | | | --- | --- | --- |
| | 33–65 | 6.0–20 | 0.05–0.08 | 5.1–7.3 | | | | | | | |
| UaF | 0–90 | 0.6–20 | 0.08–0.12 | 5.1–7.3 | <2 | | | | --- | --- | --- |
| Urban land: | | | | | | | | | | | |
| Ur. | | | | | | | | | | | |
| Wacahoota: | | | | | | | | | | | |
| WaC | 0–29 | 6.0–20 | 0.05–0.08 | 4.5–6.0 | <2 | Low | High | High | 0.20 | 5 | --- |
| | 29–78 | 0.6–2.0 | 0.08–0.12 | 4.5–6.0 | <2 | Moderate | High | High | 0.32 | | |

TABLE 9.—PHYSICAL AND CHEMICAL PROPERTIES OF SOILS—Continued

| Soil name and map symbol | Depth | Permeability | Available water capacity | Soil reaction | Salinity | Shrink-swell potential | Risk of corrosion | | Erosion factors | | Wind erodibility group |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Uncoated steel | Concrete | K | T | |
| | *In* | *In/hr* | *In/in* | *pH* | *Mmhos/cm* | | | | | | |
| **Wacahoota variant:** | | | | | | | | | | | |
| WgB, WgC | 0–31 | 6.0–20 | 0.01–0.03 | 4.5–6.0 | <2 | Low | High | High | 0.20 | 5 | --- |
| | 31–36 | 2.0–6.0 | 0.04–0.07 | 4.5–5.5 | <2 | Low | High | High | 0.24 | | |
| | 36–72 | 0.6–2.0 | 0.04–0.06 | 4.5–5.5 | <2 | Moderate | High | High | 0.32 | | |
| | 72–78 | 0.2–0.6 | 0.12–0.15 | 4.5–5.5 | <2 | Moderate | High | High | --- | | |
| **Zuber:** | | | | | | | | | | | |
| ZuA, ZuB, ZuC | 0–7 | 6.0–20 | 0.08–0.10 | 5.1–6.0 | <2 | Low | Low | Moderate | 0.20 | 5 | 2 |
| | 7–15 | 6.0–20 | 0.08–0.10 | 5.1–6.0 | <2 | Low | Low | Moderate | 0.20 | | |
| | 15–20 | 0.6–2.0 | 0.12–0.17 | 5.1–6.0 | <2 | Low | Moderate | Moderate | 0.32 | | |
| | 20–70 | 0.2–0.6 | 0.13–0.18 | 5.1–6.5 | <2 | Moderate | High | Moderate | 0.32 | | |
| | 70–82 | 0.2–0.6 | 0.13–0.18 | 5.1–6.5 | <2 | Moderate | High | Moderate | 0.28 | | |

[1] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

has a very slow infiltration rate if thoroughly wet and a very slow rate of water transmission.

*Flooding* is rated in general terms that describe the frequency, duration, and period of the year when flooding is most likely. Not considered in the ratings are velocity and depth of floodwater. Flooding is the temporary covering of soil surface with water from streams, runoff from adjacent or surrounding slopes, inflow from high tides, or a combination of these. Shallow water standing during or shortly following a rain is excluded from this definition of flooding. Marshes and swamps and depressions that have standing water above the soil surface for several months in most years are also excluded because the water is more than a temporary covering.

Frequency of flooding is expressed as *none, rare,* or *common. None* indicates no reasonable possibility of flooding. *Rare* means that flooding is unlikely but is possible under unusual weather conditions. No recent water-deposited sediment is on the surface or in the soil. Distinct horizons have developed within most soils. Because the probability of flooding is low, limitations for soil use are only slight or moderate unless the investment per acre is high, as for example, in areas under residential development. *Common* means that flooding is likely under normal weather conditions. Most soils show evidence of scouring. Recent water-deposited sediment is also evident. The probability of recurring floods is great enough to impose severe limitations on many soil uses, such as sanitary facilities and community development. Restrictions on farming are slight to severe, depending on duration and season of flooding.

*Occasional* means that flooding occurs less often than once in 2 years. Most soils show evidence of past deposition and scouring. The probability of floods is not great enough to interfere seriously with fieldwork, but some crop damage is likely. *Frequent* means that flooding occurs more often than once in 2 years. The soil shows evidence of yearly deposition and scouring. In addition, debris or other recent evidence of floodwater is on the surface and on trees, fences, or bridges. The probability of flooding is great enough to restrict the choice of crops, severely damage crops, or prevent the production of crops.

Dwellings, commercial buildings, and other high cost developments that are easily damaged by floodwater should not be located on soils subject to flooding. Septic tank filter fields, sewage lagoons, and sanitary landfills in such soils present a health hazard. Roads and streets are likely to be closed during floods and may require extensive maintenance or restoration after floods.

The consequences of flooding are much less expensive in rural areas. Flooding is a hazard to the production of crops. The frequency and duration of floods and the time of year that flooding occurs influence the suitability of soil for growing trees, pasture plants, or crops. More flooding can be withstood by trees and pasture than by crops. Certain short-season crops, however, can be grown successfully if the growing season is flood free.

*A seasonal high water table* is the highest level of a saturated zone more than 6 inches thick in soils for a continuous period of more than 2 weeks during most years. The depth to a seasonal high water table applies to undrained soils. Estimates are based mainly on the relationship between grayish colors or mottles in the soil and the depth to free water observed during the course of the soil survey. Indicated are the depth to the seasonal high water table; the kind of water table, whether perched, apparent, or above the surface; and the months of the year that the water table commonly is high. Only those saturated zones above a depth of 80 inches are indicated.

An apparent water table is a thick zone of free wa-

## TABLE 10.—WATER MANAGEMENT

["Seepage" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means that the soil was not evaluated]

| Soil name and map symbol | Limitations for— | | | Features affecting— | | | |
|---|---|---|---|---|---|---|---|
| | Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Drainage | Irrigation | Terraces and diversions | Grassed waterways |
| Adamsville: | | | | | | | |
| AdB | Severe: seepage. | Severe: seepage, piping. | Moderate: deep to water. | Cutbanks cave. | Wetness, seepage. | Not needed | Not needed. |
| Anclote: | | | | | | | |
| Ae | Severe: seepage. | Severe: piping, seepage. | Slight | Wetness, poor outlets. | Wetness | Not needed | Not needed. |
| [1] AN: | | | | | | | |
| Anclote part | Severe: seepage. | Severe: piping, seepage. | Slight | Wetness, poor outlets. | Wetness | Not needed | Not needed. |
| Tomoka part | Severe: excess humus, seepage. | Severe: compressible, low strength, piping. | Slight | Wetness, poor outlets, excess humus. | Wetness | Not needed | Not needed. |
| Apopka: | | | | | | | |
| ApB, ApC | Severe: seepage. | Severe: piping, seepage, unstable fill. | Severe: no water. | Not needed | Fast intake, seepage. | Not needed | Not needed. |
| Arredondo: | | | | | | | |
| ArB, ArC | Severe: seepage. | Severe: piping, seepage. | Severe: no water. | Not needed | Droughty, fast intake. | Not needed | Not needed. |
| [1] AsB: | | | | | | | |
| Arredondo part | Severe: seepage. | Severe: piping, seepage. | Severe: no water. | Not needed | Fast intake, seepage. | Not needed | Not needed. |
| Urban land part. | | | | | | | |
| Astatula: | | | | | | | |
| AtB, AtC | Severe: seepage. | Severe: seepage, unstable fill, piping. | Severe: no water. | Not needed | Droughty, fast intake, seepage. | Not needed | Not needed. |
| Blichton: | | | | | | | |
| BcA, BcB | Moderate: seepage. | Slight | Moderate: deep to water. | Wetness | Wetness | Not needed | Wetness. |
| [1] BdB: | | | | | | | |
| Blichton part | Moderate: seepage. | Slight | Moderate: deep to water. | Wetness, slope. | Wetness | Wetness, slope. | Wetness, slope. |
| Urban land part. | | | | | | | |
| Bluff: | | | | | | | |
| Bf | Slight | Moderate: shrink-swell. | Slight | Percs slowly, wetness. | Wetness, percs slowly. | Not needed | Not needed. |

## TABLE 10.—WATER MANAGEMENT—Continued

| Soil name and map symbol | Limitations for— | | | Features affecting— | | | |
|---|---|---|---|---|---|---|---|
| | Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Drainage | Irrigation | Terraces and diversions | Grassed waterways |
| Boardman: BoC, BoD | Moderate: slope. | Slight | Moderate: deep to water. | Wetness, slope. | Wetness, percs slowly. | Wetness, slope. | Wetness, slope. |
| Borrow pits: Bp. | | | | | | | |
| Candler: CaB, CaC | Severe: seepage. | Severe: seepage, piping, unstable fill. | Severe: no water. | Not needed | Droughty, seepage, fast intake. | Not needed | Not needed. |
| CwA | Severe: seepage. | Severe: seepage, piping. | Severe: no water. | Not needed | Percs slowly | Not needed | Not needed. |
| Eaton: Ea | Slight | Slight | Moderate: deep to water. | Wetness, percs slowly. | Wetness | Not needed | Not needed. |
| Electra: EcB | Moderate: seepage. | Severe: seepage, piping, unstable fill. | Moderate: deep to water. | Cutbanks cave. | Fast intake | Not needed | Not needed. |
| Eureka: Er, Es | Slight | Moderate: unstable fill, shrink-swell. | Slight | Percs slowly, wetness. | Wetness, percs slowly. | Not needed | Not needed. |
| Fellowship: FeB | Slight | Moderate: unstable fill, shrink-swell, compressible. | Moderate: slow refill. | Percs slowly, wetness, | Percs slowly, wetness. | Percs slowly, wetness. | Percs slowly, wetness. |
| FeC | Slight | Moderate: unstable fill, shrink-swell, compressible. | Moderate: slow refill. | Percs slowly, wetness, slope. | Percs slowly, wetness. | Percs slowly, wetness. | Percs slowly, wetness. |
| Fellowship variant: FgB | Slight | Moderate: unstable fill, shrink-swell. | Moderate: deep to water. | Percs slowly, wetness. | Percs slowly, wetness. | Percs slowly, wetness. | Percs slowly, wetness. |
| FgC | Slight | Moderate: unstable fill, shrink-swell. | Moderate: deep to water. | Percs slowly, wetness, slope. | Percs slowly, wetness. | Percs slowly, wetness. | Percs slowly, wetness. |
| Flemington: FmA | Slight | Moderate: unstable fill, compressible, hard to pack. | Severe: slow refill. | Percs slowly, wetness. | Wetness, percs slowly. | Not needed | Wetness, percs slowly. |
| FmB | Slight | Moderate: unstable fill, compressible, hard to pack. | Severe: slow refill. | Percs slowly, wetness. | Wetness, percs slowly. | Slope, wetness, percs slowly. | Wetness, percs slowly. |

TABLE 10.—WATER MANAGEMENT—Continued

| Soil name and map symbol | Limitations for— | | | Features affecting— | | | |
|---|---|---|---|---|---|---|---|
| | Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Drainage | Irrigation | Terraces and diversions | Grassed waterways |
| Gainesville: | | | | | | | |
| GaB | Severe: seepage. | Moderate: piping, seepage. | Severe: no water. | Not needed | Fast intake, seepage. | Not needed | Favorable. |
| GaC | Severe: seepage. | Moderate: piping, seepage. | Severe: no water. | Not needed | Fast intake, seepage. | Not needed | Slope. |
| Hague: | | | | | | | |
| HaB | Severe: seepage. | Moderate: piping, | Severe: no water. | Not needed | Fast intake, slope. | Favorable | Favorable. |
| HaC | Severe: seepage. | Moderate: piping. | Severe: no water. | Not needed | Fast intake, slope. | Favorable | Slope. |
| [1] HgB: | | | | | | | |
| Hague part | Severe: seepage. | Moderate: piping. | Severe: no water. | Not needed | Fast intake, slope. | Favorable | Slope. |
| Urban land part. | | | | | | | |
| Holopaw: | | | | | | | |
| Ho | Severe: seepage. | Severe: piping, seepage. | Slight | Wetness, cutbanks cave. | Wetness, fast intake. | Not needed | Not needed. |
| Jumper: | | | | | | | |
| JuB | Moderate: seepage. | Slight | Moderate: deep to water. | Cutbanks cave. | Fast intake | Not needed | Not needed. |
| Kanapaha: | | | | | | | |
| KaB | Slight | Severe: piping. | Moderate: deep to water, slow refill. | Cutbanks cave. | Wetness, fast intake. | Not needed | Not needed. |
| Kendrick: | | | | | | | |
| KeA | Moderate: seepage. | Slight | Severe: no water. | Not needed | Favorable | Not needed | Favorable. |
| KeB | Moderate: seepage. | Slight | Severe: no water. | Not needed | Favorable | Piping, slope, too sandy. | Favorable. |
| KeC | Moderate: seepage. | Slight | Severe: no water. | Not needed | Favorable | Piping, slope, too sandy. | Slope. |
| Lochloosa: | | | | | | | |
| LoA, LoB | Moderate: seepage. | Slight | Moderate: deep to water. | Wetness, cutbanks cave. | Wetness | Not needed | Wetness. |
| LoC | Moderate: seepage. | Slight | Moderate: deep to water. | Wetness, cutbanks cave, slope. | Wetness, slope. | Slope, wetness. | Slope, wetness. |
| Lynne: | | | | | | | |
| Ly | Slight | Moderate: unstable fill. | Slight | Cutbanks cave, percs slowly, wetness. | Wetness | Not needed | Not needed. |
| Martel: | | | | | | | |
| Ma | Slight | Moderate: unstable fill, shrink-swell, compressible. | Slight | Percs slowly, wetness, poor outlets. | Percs slowly, wetness. | Not needed | Not needed. |

TABLE 10.—WATER MANAGEMENT—Continued

| Soil name and map symbol | Limitations for— | | | Features affecting— | | | |
|---|---|---|---|---|---|---|---|
| | Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Drainage | Irrigation | Terraces and diversions | Grassed waterways |
| Micanopy: | | | | | | | |
| McB | Slight | Moderate: unstable fill, low strength. | Severe: deep to water. | Percs slowly | Wetness | Not needed | Favorable. |
| McC | Slight | Moderate: unstable fill, low strength. | Severe: deep to water. | Percs slowly, slope. | Wetness | Slope | Slope. |
| Okeechobee: | | | | | | | |
| Ok | Severe: excess humus, seepage. | Severe: excess humus, piping, seepage. | Slight | Wetness, excess humus. | Wetness | Not needed | Not needed. |
| Paisley: | | | | | | | |
| Pa | Slight | Severe: shrink-swell, low strength, hard to pack. | Slight | Percs slowly, wetness. | Wetness, percs slowly. | Not needed | Not needed. |
| Pamlico: | | | | | | | |
| [1] PB: | | | | | | | |
| Pamlico part | Severe: seepage. | Severe: piping. | Slight | Floods, poor outlets. | Wetness, floods. | Not needed | Not needed. |
| Martel variant part | Severe: excess humus. | Moderate: unstable fill. | Slight | Cutbanks cave, wetness, excess humus. | Wetness | Not needed | Not needed. |
| Pedro: | | | | | | | |
| [1] PeB: | | | | | | | |
| Pedro part | Severe: depth to rock, seepage. | Severe: thin layer, seepage. | Severe: no water. | Not needed | Droughty, seepage. | Not needed | Not needed. |
| Arredondo part | Severe: seepage. | Severe: piping, seepage. | Severe: no water. | Not needed | Droughty, fast intake. | Not needed | Not needed. |
| Placid: | | | | | | | |
| Pm | Severe: seepage. | Severe: seepage, piping. | Slight | Wetness, cutbanks cave. | Wetness | Not needed | Not needed. |
| [1] Pn: | | | | | | | |
| Placid part | Severe: seepage. | Severe: seepage, piping. | Slight | Wetness, cutbanks cave. | Wetness | Not needed | Not needed. |
| Pompano part | Severe: seepage. | Severe: seepage, piping. | Slight | Wetness, cutbanks cave. | Wetness | Not needed | Not needed. |
| Pomona part | Moderate: seepage. | Severe: piping, unstable fill. | Slight | Cutbanks cave, wetness. | Wetness, fast intake. | Not needed | Not needed. |
| Pomona: | | | | | | | |
| Po | Moderate: seepage. | Severe: piping, unstable fill. | Slight | Cutbanks cave, wetness. | Wetness, fast intake. | Not needed | Not needed. |

TABLE 10.—WATER MANAGEMENT—Continued

| Soil name and map symbol | Limitations for— | | | Features affecting— | | | |
|---|---|---|---|---|---|---|---|
| | Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Drainage | Irrigation | Terraces and diversions | Grassed waterways |
| Pompano: Pp, Pr | Severe: seepage. | Severe: seepage, piping. | Slight | Wetness, cutbanks cave. | Wetness | Not needed | Not needed. |
| Sparr: SpB | Moderate: seepage. | Moderate: piping, unstable fill. | Severe: deep to water. | Cutbanks cave. | Fast intake, seepage. | Not needed | Favorable. |
| SpC | Moderate: seepage. | Moderate: piping, unstable fill. | Severe: deep to water. | Cutbanks cave, slope. | Fast intake, seepage. | Slope, piping | Slope. |
| [1] SuB: Sparr part | Moderate: seepage. | Moderate: piping, unstable fill. | Severe: deep to water. | Cutbanks cave. | Fast intake, seepage. | Not needed | Favorable. |
| Urban land part. | | | | | | | |
| Tavares: TaB | Severe: seepage. | Severe: unstable fill, piping. | Severe: deep to water. | Cutbanks cave. | Seepage, fast intake. | Too sandy | Not needed. |
| Terra Ceia: Tc | Severe: excess humus, seepage. | Severe: excess humus, piping, seepage. | Slight | Wetness, excess humus. | Wetness | Not needed | Not needed. |
| Terra Ceia variant: Te | Severe: excess humus, seepage. | Severe: excess humus, piping, seepage. | Slight | Wetness, excess humus. | Wetness | Not needed | Not needed. |
| Tomoka: To | Severe: excess humus, seepage. | Severe: compressible, low strength, piping. | Slight | Wetness, poor outlets, excess humus. | Wetness | Not needed | Not needed. |
| Udalfic Arents: UaA | Severe: seepage. | Severe: seepage, piping. | Severe: no water. | Not needed | Seepage | Not needed | Not needed. |
| UaF | Severe: slope. | Severe: erodes easily, piping. | Severe: no water. | Not needed | Slope, seepage, erodes easily. | Slope | Slope. |
| Urban land: Ur. | | | | | | | |
| Wacahoota: WaC | Moderate: seepage. | Slight | Moderate: deep to water. | Wetness, slope. | Wetness | Wetness, slope. | Wetness, slope. |
| Wacahoota variant: WgB | Moderate: seepage. | Slight | Moderate: deep to water. | Wetness | Wetness | Wetness | Wetness. |

## TABLE 10.—WATER MANAGEMENT—Continued

| Soil name and map symbol | Limitations for— | | | Features affecting— | | | |
|---|---|---|---|---|---|---|---|
| | Pond reservoir areas | Embankments, dikes, and levees | Aquifer-fed excavated ponds | Drainage | Irrigation | Terraces and diversions | Grassed waterways |
| WgC | Moderate: seepage. | Slight | Moderate: deep to water. | Wetness, slope. | Wetness | Wetness | Wetness. |
| Zuber: | | | | | | | |
| ZuA | Moderate: seepage. | Moderate: low strength. | Severe: no water. | Not needed | Favorable | Not needed | Favorable. |
| ZuB | Moderate: seepage. | Moderate: low strength. | Severe: no water. | Not needed | Favorable | Favorable | Favorable. |
| ZuC | Moderate: seepage. | Moderate: low strength. | Severe: no water. | Not needed | Slope | Slope | Slope. |

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[1] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

## TABLE 11.—CONSTRUCTION MATERIALS

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," and "unsuited." Absence of an entry means that the soil was not rated]

| Soil name and map symbol | Road fill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| Adamsville: | | | | |
| AdB | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Anclote: | | | | |
| Ae | Poor: wetness, area reclaim. | Fair: excess humus | Unsuited: excess fines | Poor: wetness. |
| [1] AN: | | | | |
| Anclote part | Poor: wetness, area reclaim. | Fair: excess humus | Unsuited: excess fines | Poor: wetness. |
| Tomoka part | Poor: excess humus, low strength, wetness. | Unsuited: excess humus. | Unsuited: excess humus. | Poor: wetness. |
| Apopka: | | | | |
| ApB, ApC | Good | Good | Unsuited: excess fines | Poor: too sandy. |
| Arredondo: | | | | |
| ArB, ArC | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy. |
| [1] AsB: | | | | |
| Arredondo part | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Urban land part. | | | | |
| Astatula: | | | | |
| AtB, AtC | Good | Good | Unsuited: excess fines | Poor: too sandy. |
| Blichton: | | | | |
| BcA, BcB | Poor: wetness | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |
| [1] BdB: | | | | |
| Blichton part | Poor: wetness | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |
| Urban land part. | | | | |

TABLE 11.—CONSTRUCTION MATERIALS—Continued

| Soil name and map symbol | Road fill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| Bluff:<br>Bf | Poor: low strength, shrink-swell, wetness. | Unsuited: excess fines | Unsuited: excess fines | Poor: too clayey, wetness. |
| Boardman:<br>BoC, BoD | Poor: wetness | Unsuited: excess fines | Unsuited: excess fines | Poor: wetness, too sandy. |
| Borrow pits:<br>Bp. | | | | |
| Candler:<br>CaB, CaC | Good | Good | Unsuited: excess fines | Poor: too sandy. |
| CwA | Poor: shrink-swell, low strength. | Good | Unsuited: excess fines | Poor: too clayey. |
| Eaton:<br>Ea | Poor: wetness, low strength. | Unsuited: excess fines | Unsuited: excess fines | Poor: wetness, too sandy. |
| Electra:<br>EcB | Good | Good | Unsuited: excess fines | Poor: too sandy, wetness. |
| Eureka:<br>Er, Es | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines | Unsuited: excess fines | Poor: wetness, too sandy. |
| Fellowship:<br>FeB, FeC | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines | Unsuited: excess fines | Poor: wetness, area reclaim. |
| Fellowship variant:<br>FgB, FgC | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines | Unsuited: excess fines | Poor: wetness, small stones, too sandy. |
| Flemington:<br>FmA, FmB | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines | Unsuited: excess fines | Poor: thin layer, wetness. |
| Gainesville:<br>GaB, GaC | Good | Poor: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Hague:<br>HaB, HaC | Good | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy. |
| [1] HgB:<br>Hague part | Good | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Urban land part. | | | | |
| Holopaw:<br>Ho | Poor: wetness | Good | Unsuited: excess fines | Poor: too sandy, wetness. |
| Jumper:<br>JuB | Good | Poor | Unsuited: excess fines | Poor: too sandy. |
| Kanapaha:<br>KaB | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |
| Kendrick:<br>KeA, KeB, KeC | Fair: low strength | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Lochloosa:<br>LoA, LoB, LoC | Fair: low strength | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Lynne:<br>Ly | Poor: low strength | Fair: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |

TABLE 11.—CONSTRUCTION MATERIALS—Continued

| Soil name and map symbol | Road fill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| Martel: | | | | |
| Ma | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines | Unsuited: excess fines | Poor: wetness. |
| Micanopy: | | | | |
| McB, McC | Poor: shrink-swell, low strength. | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Okeechobee: | | | | |
| Ok | Poor: wetness, excess humus, low strength. | Unsuited: excess humus. | Unsuited: excess humus. | Poor: wetness. |
| Paisley: | | | | |
| Pa | Poor: shrink-swell, low strength, wetness. | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy, thin layer, wetness. |
| Pamlico: | | | | |
| [1] PB: | | | | |
| Pamlico part | Poor: wetness, excess humus. | Poor: excess humus | Unsuited: excess humus. | Poor: wetness. |
| Martel variant part | Poor: excess humus, wetness. | Poor: excess fines | Unsuited: excess fines | Poor: wetness. |
| Pedro: | | | | |
| [1] PeB: | | | | |
| Pedro part | Poor: thin layer, area reclaim. | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy, area reclaim. |
| Arredondo part | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Placid: | | | | |
| Pm | Poor: wetness | Fair: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |
| [1] Pn: | | | | |
| Placid part | Poor: wetness | Fair: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |
| Pompano part | Poor: wetness | Good | Unsuited: excess fines | Poor: too sandy, wetness. |
| Pomona part | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |
| Pomona: | | | | |
| Po | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy, wetness. |
| Pompano: | | | | |
| Pp, Pr | Poor: wetness | Good | Unsuited: excess fines | Poor: too sandy, wetness. |
| Sparr: | | | | |
| SpB, SpC | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy. |
| [1] SuB: | | | | |
| Sparr part | Good | Fair: excess fines | Unsuited: excess fines | Poor: too sandy. |
| Urban land part. | | | | |
| Tavares: | | | | |
| TaB | Good | Good | Unsuited: excess fines | Poor: too sandy. |
| Terra Ceia: | | | | |
| Tc | Poor: wetness, excess humus, low strength. | Unsuited: excess fines | Unsuited: excess fines | Poor: wetness. |
| Terra Ceia variant: | | | | |
| Te | Poor: wetness, excess humus, low strength. | Unsuited: excess humus. | Unsuited: excess humus. | Poor: wetness. |

TABLE 11.—CONSTRUCTION MATERIALS—Continued

| Soil name and map symbol | Road fill | Sand | Gravel | Topsoil |
|---|---|---|---|---|
| **Tomoka:** | | | | |
| To | Poor: excess humus, low strength, wetness. | Unsuited: excess humus. | Unsuited: excess humus. | Poor: wetness. |
| **Udalfic Arents:** | | | | |
| UaA | Fair: low strength | Unsuited: excess fines | Unsuited: excess fines | Moderate: small stones. |
| UaF | Poor: slope | Unsuited: excess fines | Unsuited: excess fines | Poor: slope. |
| **Urban land:** | | | | |
| Ur. | | | | |
| **Wacahoota:** | | | | |
| WaC | Poor: wetness | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy. |
| **Wacahoota variant:** | | | | |
| WgB, WgC | Poor: wetness, area reclaim. | Unsuited: excess fines | Poor: excess fines | Poor: small stones, too sandy, wetness. |
| **Zuber:** | | | | |
| ZuA, ZuB, ZuC | Poor: low strength | Unsuited: excess fines | Unsuited: excess fines | Poor: too sandy. |

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[1] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

TABLE 12.—SOIL AND WATER FEATURES

[Absence of an entry indicates that the feature is not a concern. See text for descriptions of symbols and such terms as "apparent" and "perched." The symbol > means greater than]

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | | Bedrock | | Subsidence | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth[1] | Kind | Months | Depth | Hardness | Initial | Total |
| | | | | | *Ft* | | | *In* | | *In* | *In* |
| **Adamsville:** | | | | | | | | | | | |
| AdB | C | None | --- | --- | 2.0–3.5 | Apparent | Jun-Nov | >60 | --- | --- | --- |
| **Anclote:** | | | | | | | | | | | |
| [2] Ae | D | None | --- | --- | 0–1.0 | Apparent | Jun-Dec | >60 | --- | --- | --- |
| [3] AN: | | | | | | | | | | | |
| Anclote part | D | Frequent | Very long. | Jun-Apr | 0–1.0 | Apparent | Jun-Dec | >60 | --- | --- | --- |
| Tomoka part | A/D | Frequent | Very long. | Jun-Apr | (1)–0 | Marsh | Jun-Apr | >60 | --- | 4–8 | 24 |
| **Apopka:** | | | | | | | | | | | |
| ApB, ApC | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| **Arredondo:** | | | | | | | | | | | |
| ArB, ArC | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| [3] AsB: | | | | | | | | | | | |
| Arredondo part | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| Urban land part. | | | | | | | | | | | |
| **Astatula:** | | | | | | | | | | | |
| AtB, AtC | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| **Blichton:** | | | | | | | | | | | |
| BcA, BcB | D | None | --- | --- | 0–1.0 | Apparent | Jun-Sep | >60 | --- | --- | --- |
| [3] BdB: | | | | | | | | | | | |
| Blichton part | D | None | --- | --- | 0–1.0 | Apparent | Jun-Sep | >60 | --- | --- | --- |
| Urban land part. | | | | | | | | | | | |

TABLE 12.—SOIL AND WATER FEATURES—Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | | Bedrock | | Subsidence | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth [1] | Kind | Months | Depth | Hardness | Initial | Total |
| | | | | | *Ft* | | | *In* | | *In* | *In* |
| Bluff: | | | | | | | | | | | |
| Bf | D | Frequent | Very long. | Jun-Apr | 0–1.0 | Apparent | Jul-Dec | >60 | --- | --- | --- |
| Boardman: | | | | | | | | | | | |
| BoC, BoD | D | None | --- | --- | 0–1.0 | Perched | Jun-Sep | >60 | --- | --- | --- |
| Borrow pits: | | | | | | | | | | | |
| Bp. | | | | | | | | | | | |
| Candler: | | | | | | | | | | | |
| CaB, CaC | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| CwA | C | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| Eaton: | | | | | | | | | | | |
| Ea | D | None | --- | --- | 0–1.0 | Apparent | Jul-Oct | >60 | --- | --- | --- |
| Electra: | | | | | | | | | | | |
| EcB | C | None | --- | --- | 2.0–3.5 | Apparent | Jul-Oct | >60 | --- | --- | --- |
| Eureka: | | | | | | | | | | | |
| Er, [4]Es | D | None | --- | --- | 0–1.0 | Apparent | Jun-Nov | >60 | --- | --- | --- |
| Fellowship: | | | | | | | | | | | |
| FeB, FeC | D | None | --- | --- | 0.5–2.0 | Perched | Jul-Oct | >60 | --- | --- | --- |
| Fellowship variant: | | | | | | | | | | | |
| FgB, FgC | D | None | --- | --- | 0–1.0 | Perched | Jun-Sep | >60 | --- | --- | --- |
| Flemington: | | | | | | | | | | | |
| FmA, FmB | D | None | --- | --- | 0–2.5 | Perched | Jun-Sep | >60 | --- | --- | --- |
| Gainesville: | | | | | | | | | | | |
| GaB, GaC | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| Hague: | | | | | | | | | | | |
| HaB, HaC | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| [3]HgB: | | | | | | | | | | | |
| Hague part | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| Urban land part. | | | | | | | | | | | |
| Holopaw: | | | | | | | | | | | |
| Ho | B/D | None | --- | --- | 0–1.0 | Apparent | Jun-Nov | >60 | --- | --- | --- |
| Jumper: | | | | | | | | | | | |
| JuB | C | None | --- | --- | 2.0–5.0 | Apparent | Jul-Oct | >60 | --- | --- | --- |
| Kanapaha: | | | | | | | | | | | |
| KaB | A/D | None | --- | --- | 0–1.0 | Apparent | Jul-Sep | >60 | --- | --- | --- |
| Kendrick: | | | | | | | | | | | |
| KeA, KeB, KeC | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| Lochloosa: | | | | | | | | | | | |
| LoA, LoB, LoC | C | None | --- | --- | 2.5–5.0 | Apparent | Jul-Oct | >60 | --- | --- | --- |
| Lynne: | | | | | | | | | | | |
| Ly | B/D | None | --- | --- | 0–1.0 | Apparent | Jul-Sep | >60 | --- | --- | --- |
| Martel: | | | | | | | | | | | |
| Ma | D | None | --- | --- | (1)–0 | Swamp | May-Nov | >60 | --- | --- | --- |
| Micanopy: | | | | | | | | | | | |
| McB, McC | C | None | --- | --- | 1.5–5.0 | Perched | Jul-Nov | >60 | --- | --- | --- |
| Okeechobee: | | | | | | | | | | | |
| Ok | A/D | None | --- | --- | (1)–0 | Marsh | Jun-Apr | >60 | --- | 4–8 | 55 |

TABLE 12.—SOIL AND WATER FEATURES—Continued

| Soil name and map symbol | Hydrologic group | Flooding | | | High water table | | | Bedrock | | Subsidence | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Frequency | Duration | Months | Depth[1] | Kind | Months | Depth | Hardness | Initial | Total |
| | | | | | *Ft* | | | *In* | | *In* | *In* |
| Paisley: | | | | | | | | | | | |
| Pa | D | Rare | --- | --- | 0–1.0 | Apparent | Jun-Nov | >60 | --- | --- | --- |
| Pamlico: | | | | | | | | | | | |
| [3]PB: | | | | | | | | | | | |
| Pamlico part | D | None | --- | --- | (1)–1.0 | Swamp | Nov-Jul | >60 | --- | 4–12 | 28 |
| Martel variant part. | D | None | --- | --- | (1)–0 | Swamp | Jun-Mar | >60 | --- | --- | --- |
| Pedro: | | | | | | | | | | | |
| [3]PeB: | | | | | | | | | | | |
| Pedro part | C | None | --- | --- | >5.0 | --- | --- | 10–30 | Hard | --- | --- |
| Arredondo part | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| Placid: | | | | | | | | | | | |
| Pm | A/D | None | --- | --- | 0–1.0 | Apparent | Jun-Feb | >60 | --- | --- | --- |
| [3]Pn: | | | | | | | | | | | |
| Placid part | A/D | None | --- | --- | 0–1.0 | Apparent | Jun-Nov | >60 | --- | --- | --- |
| Pompano part | A/D | None | --- | --- | 0–1.0 | Apparent | Jun-Nov | >60 | --- | --- | --- |
| Pomona part | B/D | None | --- | --- | 0–1.0 | Apparent | Jul-Sep | >60 | --- | --- | --- |
| Pomona: | | | | | | | | | | | |
| Po | B/D | None | --- | --- | 0–1.0 | Apparent | Jul-Sep | >60 | --- | --- | --- |
| Pompano: | | | | | | | | | | | |
| Pp, [4]Pr | A/D | None | --- | --- | 0–1.0 | Apparent | Jun-Nov | >60 | --- | --- | --- |
| Sparr: | | | | | | | | | | | |
| SpB, SpC | A | None | --- | --- | 2.5–5.0 | Apparent | Jul-Oct | >60 | --- | --- | --- |
| [3]SuB: | | | | | | | | | | | |
| Sparr part | A | None | --- | --- | 2.5–5.0 | Apparent | Jul-Oct | >60 | --- | --- | --- |
| Urban land part. | | | | | | | | | | | |
| Tavares: | | | | | | | | | | | |
| TaB | A | None | --- | --- | 3.5–5.0 | Apparent | Jun-Dec | >60 | --- | --- | --- |
| Terra Ceia: | | | | | | | | | | | |
| Tc | A/D | None | --- | --- | (1)–0 | Marsh | Jun-Apr | >60 | --- | 4–8 | 50–60 |
| Terra Ceia variant: | | | | | | | | | | | |
| Te | A/D | None | --- | --- | (1)–0 | Swamp | Jun-Apr | >60 | --- | 4–8 | 50–60 |
| Tomoka: | | | | | | | | | | | |
| To | A/D | None | --- | --- | (1)–0 | Marsh | Jun-Apr | >60 | --- | --- | 24 |
| Udalfic Arents: | | | | | | | | | | | |
| UaA | A | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| UaF | B | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |
| Urban land: | | | | | | | | | | | |
| Ur. | | | | | | | | | | | |
| Wacahoota: | | | | | | | | | | | |
| WaC | D | None | --- | --- | 0–1.0 | Perched | Jun-Sep | >60 | --- | --- | --- |
| Wacahoota variant: | | | | | | | | | | | |
| WgB, WgC | D | None | --- | --- | 0–1.0 | Apparent | Jun-Sep | >60 | --- | --- | --- |
| Zuber: | | | | | | | | | | | |
| ZuA, ZuB, ZuC | C | None | --- | --- | >6.0 | --- | --- | >60 | --- | --- | --- |

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[1] A number in parentheses indicates the height of the water table above the surface.

[2] Areas along the Oklawaha River are subject to flooding.

[3] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

[4] Standing water is above the surface for long periods in most years.

ter in the soil. It is indicated by the level at which water stands in an uncased borehole after adequate time for adjustment in the surrounding soil. It is influenced by the hydrostatic pressure of soil water, pressure at greater depths penetrated by the borehole, water running across impermeable layers, and other factors.

A perched water table is above an unsaturated zone that has restricted permeability. To determine whether a water table is perched, it is necessary to observe the water level in cased wells above and below the layer that has restricted permeability. If the water in the well is consistently higher than this layer, the water table is perched.

Another kind of water table is above the surface much of the time. It occurs in swamps and marshes. Some depressions also have a water table above the surface for long periods.

A seasonal high water table is important in engineering. Its depth and duration influence the suitability of soils for septic tank absorption fields, shallow excavations, sanitary landfills, dwellings, and local roads and streets. It also influences ease of excavation for road fill and topsoil.

The water table also influences the growth of crops. A water table that is near the surface during the growing season is detrimental to most plants. Plants, however, tend to lower the water table through transpiration. A change in land use can greatly change the wetness of a soil. For example, a change from growing trees to growing soybeans lowers the transpiration rate and can result in a wetter soil. Changing land use from crops, pasture, or trees to urban development not only decreases the transpiration rate but also increases runoff. A wetter soil may result.

*Bedrock* is solid rock beneath the soil. Depth to bedrock is shown, in inches, for the soils of the survey area. Hardness of the bedrock can be described as rippable or hard. Rippable bedrock can be excavated with a single-tooth ripping attachment mounted on a 290-to 300-horsepower tractor. Hard bedrock requires blasting or use of more than 300-horsepower excavators.

*Subsidence* refers to the lowering of the level of the soil surface. If water is removed from and the water table lowered in an organic soil, the soil subsides. Initial subsidence, which occurs in the first year or two, is the most pronounced. Table 12 shows an estimated range, in inches, of initial subsidence for some of the soils in the survey area. After initial subsidence, organic soils in Florida subside at the rate of about 1 inch per year. Total subsidence, also estimated in inches, is based on the thickness of the organic material shown in the representative profile. Total subsidence can vary a few inches from the estimated total, depending on the mineral content and original thickness of the soil.

## Recreation

Use of soils for recreation is becoming more important in the Marion County Area because of the population growth and the continuing increase in tourism. The demand for camping sites and picnic areas is continually increasing because the area has many tourist attractions and is near other tourist attractions within the State.

Knowledge of soils is necessary in planning, developing, and maintaining areas used for recreation. The soils are rated in table 13 according to limitations that affect their suitability for camp areas, picnic areas, playgrounds, and paths and trails. The ratings are based on such soil features as flooding, wetness, slopes, and texture of the surface layer. Not considered are location, land values, scenic quality, and other factors that affect the desirability of the site. These factors can be important enough, however, especially where good sites are scarce, to justify modifying or removing the soil limitations so that the site can be used safely.

In table 13 the soils are rated as having slight, moderate, or severe limitations. It is assumed that a good plant cover can be established and maintained. A rating of *slight* means that soil properties are generally favorable and limitations are so minor that they easily can be overcome. A *moderate* limitation can be overcome or modified by planning, design, or special maintenance. A *severe* limitation requires costly soil reclamation, special design, intense maintenance, or a combination of these.

Camp areas are subject to heavy foot traffic and limited vehicular traffic. Little preparation of the site is required, other than shaping and leveling for tent and parking areas. The best soils have mild slopes, good drainage, a surface free of rocks and coarse fragments, no flooding during periods of heavy use, and a surface that is firm after rains but not dusty when dry.

Picnic areas are subject to heavy foot traffic. Most of the vehicular traffic, however, is confined to access roads. The best soils are at least moderately well drained, are firm when wet but not dusty when dry, are not flooded during the season of use, and do not have slopes or stones that greatly increase the cost of leveling sites or of building access roads.

Playgrounds are subject to intensive foot traffic. The best soils have a nearly level surface free of coarse fragments and rock outcrop, good drainage, no flooding during periods of heavy use, and a surface that is firm after rains but not dusty when dry. If grading and leveling are required, depth to rock is important.

Paths and trails are used for local and cross-country travel by foot or on horseback. Design and layout should require little or no cutting and filling. The best soils are at least moderately well drained, are firm when wet but not dusty when dry, are flooded no more than once during the season of use, have slopes of less than 15 percent, and have few or no rocks or stones on the surface.

## Town and Country Planning

This section furnishes information on the degree and kind of limitations of the soils for town and county planning. This information can be used by

## TABLE 13.—RECREATIONAL DEVELOPMENT

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of entry means that the soil was not rated]

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails |
|---|---|---|---|---|
| Adamsville: | | | | |
| AdB | Moderate: too sandy, wetness. | Moderate: too sandy, wetness. | Severe: too sandy | Moderate: too sandy, wetness. |
| Anclote: | | | | |
| Ae | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| [1] AN: | | | | |
| Anclote part | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Tomoka part | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Apopka: | | | | |
| ApB, ApC | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, | Moderate: too sandy. |
| Arredondo: | | | | |
| ArB | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| ArC | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, slope. | Moderate: too sandy. |
| [1] AsB: | | | | |
| Arredondo part | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| Urban land part. | | | | |
| Astatula: | | | | |
| AtB | Severe: too sandy | Severe: too sandy | Severe: too sandy | Severe: too sandy. |
| AtC | Severe: too sandy | Severe: too sandy | Severe: too sandy, slope. | Severe: too sandy. |
| Blichton: | | | | |
| BcA, BcB | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| [1] BdB: | | | | |
| Blichton part | Severe: wetness | Severe: wetness | Severe: wetness, slope | Severe: wetness. |
| Urban land part. | | | | |
| Bluff: | | | | |
| Bf | Severe: wetness, floods, percs slowly. | Severe: wetness, floods | Severe: wetness, floods | Severe: wetness, floods. |
| Boardman: | | | | |
| BoC, BoD | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness, slope | Severe: wetness. |
| Borrow pits: | | | | |
| Bp. | | | | |
| Candler: | | | | |
| CaB | Severe: too sandy | Severe: too sandy | Severe: too sandy | Severe: too sandy. |
| CaC | Severe: too sandy | Severe: too sandy | Severe: too sandy, slope. | Severe: too sandy. |
| CwA | Severe: too clayey | Severe: too clayey | Severe: too clayey | Severe: too clayey. |
| Eaton: | | | | |
| Ea | Severe: wetness, percs slowly. | Moderate: too sandy | Severe: wetness, too sandy. | Severe: wetness. |
| Electra: | | | | |
| EcB | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, soil blowing. | Moderate: too sandy. |
| Eureka: | | | | |
| Er, Es | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness, percs slowly. | Severe: wetness. |

TABLE 13.—RECREATIONAL DEVELOPMENT—Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails |
|---|---|---|---|---|
| Fellowship: | | | | |
| FeB | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness, percs slowly. | Severe: wetness. |
| FeC | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness, slope, percs slowly. | Severe: wetness. |
| Fellowship variant: | | | | |
| FgB | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness, percs slowly, small stones. | Severe: wetness. |
| FgC | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness, percs slowly, small stones. | Severe: wetness. |
| Flemington: | | | | |
| FmA, FmB | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Gainesville: | | | | |
| GaB | Moderate: too sandy | Moderate: too sandy | Moderate: too sandy, slope. | Moderate: too sandy. |
| GaC | Moderate: too sandy | Moderate: too sandy | Severe: slope | Moderate: too sandy. |
| Hague: | | | | |
| HaB | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| HaC | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, slope. | Moderate: too sandy. |
| [1] HgB: | | | | |
| Hague part | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| Urban land part. | | | | |
| Holopaw: | | | | |
| Ho | Severe: wetness, too sandy. | Severe: wetness. too sandy. | Severe: wetness, too sandy. | Severe: wetness, too sandy. |
| Jumper: | | | | |
| JuB | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| Kanapaha: | | | | |
| KaB | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, slope. | Moderate: too sandy. |
| Kendrick: | | | | |
| KeA | Moderate: too sandy | Moderate: too sandy | Moderate: too sandy | Moderate: too sandy. |
| KeB | Moderate: too sandy | Moderate: too sandy | Moderate: too sandy, slope. | Moderate: too sandy. |
| KeC | Moderate: too sandy | Moderate: too sandy | Severe: slope | Moderate: too sandy. |
| Lochloosa: | | | | |
| LoA, LoB | Moderate: wetness, too sandy. | Moderate: wetness, too sandy. | Severe: too sandy, wetness. | Moderate: too sandy, wetness. |
| LoC | Moderate: wetness, too sandy. | Moderate: wetness, too sandy. | Severe: too sandy, wetness, slope. | Moderate: too sandy, wetness. |
| Lynne: | | | | |
| Ly | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness. |
| Martel: | | | | |
| Ma | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness | Severe: wetness. |
| Micanopy: | | | | |
| McB | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| McC | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, slope. | Moderate: too sandy. |

TABLE 13.—RECREATIONAL DEVELOPMENT—Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails |
|---|---|---|---|---|
| Okeechobee: | | | | |
| Ok | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Paisley: | | | | |
| Pa | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness | Severe: wetness. |
| Pamlico: | | | | |
| [1]PB: | | | | |
| Pamlico part | Severe: wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. |
| Martel variant part | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Pedro: | | | | |
| [1]PeB: | | | | |
| Pedro part | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, depth to rock. | Moderate: too sandy. |
| Arredondo part | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| Placid: | | | | |
| Pm | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| [1]Pn: | | | | |
| Placid part | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Pompano part | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness. |
| Pomona part | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness. |
| Pomona: | | | | |
| Po | Severe: wetness | Severe: wetness | Severe: wetness, too sandy | Severe: wetness. |
| Pompano: | | | | |
| Pp, Pr | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness. |
| Sparr: | | | | |
| SpB | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| SpC | Moderate: too sandy | Moderate: too sandy | Severe: too sandy, slope. | Moderate: too sandy. |
| [1]SuB: | | | | |
| Sparr part | Moderate: too sandy | Moderate: too sandy | Severe: too sandy | Moderate: too sandy. |
| Urban land part. | | | | |
| Tavares: | | | | |
| TaB | Moderate: too sandy | Moderate: too sandy. | Severe: too sandy | Moderate: too sandy. |
| Terra Ceia: | | | | |
| Tc | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Terra Ceia variant: | | | | |
| Te | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Tomoka: | | | | |
| To | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. | Severe: wetness, excess humus. |
| Udalfic Arents: | | | | |
| UaA | Moderate: soil blowing. | Moderate: soil blowing. | Moderate | Moderate: soil blowing. |

### TABLE 13.—RECREATIONAL DEVELOPMENT—Continued

| Soil name and map symbol | Camp areas | Picnic areas | Playgrounds | Paths and trails |
|---|---|---|---|---|
| Udalfic Arents: | | | | |
| UaF | Severe: slope | Severe: slope | Severe: slope | Severe: slope. |
| Urban land: Ur. | | | | |
| Wacahoota: | | | | |
| WaC | Severe: wetness | Severe: wetness | Severe: wetness, slope. | Severe: wetness. |
| Wacahoota variant: | | | | |
| WgB | Severe: wetness | Severe: wetness | Severe: wetness, small stones. | Severe: wetness. |
| WgC | Severe: wetness | Severe: wetness | Severe: wetness, slope, small stones. | Severe: wetness. |
| Zuber: | | | | |
| ZuA | Slight | Slight | Slight | Slight. |
| ZuB | Slight | Slight | Moderate: slope | Slight. |
| ZuC | Moderate: slope | Moderate: slope | Severe: slope | Slight. |

[1] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

planning commissions, boards, contractors, realtors, engineers, landowners, home builders, and others.

The continuing influx of population into the survey area has increased the use of soils as sites for schools, churches, shopping centers, small industrial buildings, residential development, and associated uses. As communities grow, such serious problems as land use and pollution increase.

Many factors are important in planning for orderly development. Soil quality is a basic and continuing factor. It demands full consideration, not only as a guide in determining use but also as a measure of the kind and magnitude of problems that must be overcome. Whereas it may not be practical to realize the highest potential of all soils, full knowledge of the problems that must be solved permits deliberate adjustment in use. Soil qualities are important in planning industrial, residential, and related urban development.

The interpretations in this section are concerned with limitations imposed by soil conditions. Good planning requires careful consideration of these limitations.

The interpretations and the soil map can be helpful in planning and developing areas for town and country uses. The interpretations, however, do not eliminate the need for more detailed onsite investigation of selected sites, especially if the use is very intensive. Also, examination of the soils was only to a depth of about 5 to 7 feet. If information about soil at a lower depth is needed, additional field examination is needed. Additional onsite investigation of small areas to be intensively used is especially important because many delineated areas of a given mapping unit include spots of other kinds of soil that have strongly contrasting properties and different limitations for the planned use. Even in these situations, however, the soil map is useful for planning more detailed field investigations and for suggesting the kinds of problems that may be expected.

Most of the information in this section is presented in tables 14 and 15, which show the degree and kind of soil limitations for selected uses of soils. Additional information useful to planning boards, commissions, contractors, realtors, and others interested in urban development can be found in other sections of the soil survey, particularly in "Descriptions of the Soils" and "Engineering."

In tables 14 and 15, soil limitations are expressed as slight, moderate, and severe. *Slight* means that soil properties are generally favorable for the specified use and limitations are so minor that they are easily overcome. *Moderate* means that some soil properties are unfavorable but can be overcome or modified by special planning and design. During some part of the year the performance is somewhat less than is desirable. Some soils require such treatment as extended sewage absorption fields, extra excavation, or some modification of certain features. Modification can include such features as special foundations, extra reinforcement of structures, and modified septic tank absorption fields. *Severe* means that soil properties are so unfavorable and so difficult to correct or overcome that major soil reclamation, special design, or intensive

## TABLE 14.—BUILDING SITE DEVELOPMENT

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry means that the soil was not rated]

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets |
|---|---|---|---|---|---|
| Adamsville: | | | | | |
| AdB | Severe: cutbanks cave, wetness. | Moderate: wetness. | Severe: wetness | Moderate: wetness. | Moderate: wetness. |
| Anclote: | | | | | |
| Ae | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| [1] AN: | | | | | |
| Anclote part | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Tomoka part | Severe: wetness, excess humus, cutbanks cave. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, corrosive. | Severe: excess humus, low strength, wetness. |
| Apopka: | | | | | |
| ApB | Severe: cutbanks cave. | Slight | Slight | Moderate: slope | Slight. |
| ApC | Severe: cutbanks cave. | Moderate: slope | Moderate: slope | Severe: slope | Moderate slope. |
| Arredondo: | | | | | |
| ArB | Severe: cutbanks cave. | Slight | Slight | Slight | Slight. |
| ArC | Severe: cutbanks cave. | Slight | Slight | Moderate: slope | Slight. |
| [1] AsB: | | | | | |
| Arredondo part | Severe: cutbanks cave. | Slight | Slight | Slight | Slight. |
| Urban land part. | | | | | |
| Astatula: | | | | | |
| AtB | Severe: cutbanks cave. | Slight | Slight | Slight | Slight. |
| AtC | Severe: cutbanks cave. | Moderate: slope | Moderate: slope | Severe: slope | Moderate: slope. |
| Blichton: | | | | | |
| BcA, BcB | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| [1] BdB: | | | | | |
| Blichton part | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| Urban land part. | | | | | |
| Bluff: | | | | | |
| Bf | Severe: wetness | Severe: wetness, floods, shrink-swell. | Severe: wetness, floods, shrink-swell. | Severe: wetness, floods, shrink-swell. | Severe: wetness, shrink-swell, low strength. |
| Boardman: | | | | | |
| BoC | Severe: wetness | Severe: wetness | Severe: wetness, shrink-swell. | Severe: wetness | Severe: wetness. |
| BoD | Severe: wetness | Severe: wetness | Severe: wetness, shrink-swell. | Severe: wetness, slope. | Severe: wetness. |
| Borrow pits: | | | | | |
| Bp. | | | | | |

TABLE 14.—BUILDING SITE DEVELOPMENT—Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets |
|---|---|---|---|---|---|
| Candler: | | | | | |
| CaB | Severe: cutbanks cave. | Slight | Slight | Slight | Slight. |
| CaC | Severe: cutbanks cave. | Moderate: slope | Moderate: slope | Severe: slope | Moderate: slope. |
| CwA | Severe: cutbanks cave. | Severe: shrink-swell, low strength. | Severe: shrink-swell, low strength. | Severe: shrink-swell, low strength. | Severe: shrink-swell, low strength. |
| Eaton: | | | | | |
| Ea | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness, low strength. | Severe: wetness, low strength. | Severe: wetness, low strength. |
| Electra: | | | | | |
| EcB | Severe: cutbanks cave, wetness. | Slight | Moderate: wetness. | Slight | Moderate: wetness. |
| Eureka: | | | | | |
| Er, Es | Severe wetness | Severe: shrink-swell, wetness, low strength. | Severe: shrink-swell, wetness, low strength. | Severe: shrink-swell, wetness, low strength. | Severe: shrink-swell, low strength, wetness. |
| Fellowship: | | | | | |
| FeB, FeC | Severe: wetness, too clayey. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. |
| Fellowship variant: | | | | | |
| FgB, FgC | Severe: wetness, too clayey. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. |
| Flemington: | | | | | |
| FmA, FmB | Severe: wetness, too clayey. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: shrink-swell, low strength, wetness. |
| Gainesville: | | | | | |
| GaB | Severe: cutbanks cave. | Slight | Slight | Slight | Slight. |
| GaC | Severe: cutbanks cave. | Slight | Slight | Moderate: slope | Slight. |
| Hague: | | | | | |
| HaB | Slight | Slight | Slight | Slight | Slight. |
| HaC | Slight | Slight | Slight | Moderate: slope | Slight. |
| [1]HgB: | | | | | |
| Hague part | Slight | Slight | Slight | Slight | Slight. |
| Urban land part. | | | | | |
| Holopaw: | | | | | |
| Ho | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Jumper: | | | | | |
| JuB | Severe: wetness, cutbanks cave. | Moderate: wetness. | Severe: wetness | Moderate: wetness. | Moderate: wetness. |
| Kanapaha: | | | | | |
| KaB | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Kendrick: | | | | | |
| KeA, KeB | Slight | Slight | Slight | Slight | Moderate: low strength. |

TABLE 14.—BUILDING SITE DEVELOPMENT—Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets |
|---|---|---|---|---|---|
| Kendrick: | | | | | |
| KeC | Slight | Slight | Slight | Moderate: slope | Moderate: low strength. |
| Lochloosa: | | | | | |
| LoA, LoB | Severe: wetness, cutbanks cave. | Moderate: wetness, low strength. | Severe: wetness | Moderate: wetness, low strength. | Moderate: wetness, low strength. |
| LoC | Severe: wetness, cutbanks cave. | Moderate: wetness, low strength. | Severe: wetness | Moderate: wetness, low strength, slope. | Moderate: wetness, low strength. |
| Lynne: | | | | | |
| Ly | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness, low strength. |
| Martel: | | | | | |
| Ma | Severe: wetness, too clayey. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. |
| Micanopy: | | | | | |
| McB, McC | Severe: wetness | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: wetness, shrink-swell. | Severe: shrink-swell, low strength. |
| Okeechobee: | | | | | |
| Ok | Severe: wetness, excess humus. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. |
| Paisley: | | | | | |
| Pa | Severe: wetness, too clayey. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. | Severe: wetness, shrink-swell, low strength. |
| Pamlico: | | | | | |
| [1]PB: | | | | | |
| Pamlico part | Severe: floods, wetness. | Severe: wetness, floods, low strength. | Severe: wetness, floods, low strength. | Severe: wetness, floods, low strength. | Severe: wetness, floods, low strength. |
| Martel variant part. | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Pedro: | | | | | |
| [1]PeB: | | | | | |
| Pedro part | Severe: depth to rock, cutbanks cave. | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. |
| Arredondo part | Severe: cutbanks cave. | Slight | Slight | Slight | Slight. |
| Placid: | | | | | |
| Pm | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| [1]Pn: | | | | | |
| Placid part | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| Pompano part | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| Pomona part | Severe: cutbanks cave, wetness. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |

TABLE 14.—BUILDING SITE DEVELOPMENT—Continued

| Soil name and map symbol | Shallow excavations | Dwellings without basements | Dwellings with basements | Small commercial buildings | Local roads and streets |
|---|---|---|---|---|---|
| Pomona: | | | | | |
| Po | Severe: cutbanks cave, wetness. | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness. |
| Pompano: | | | | | |
| Pp, Pr | Severe: wetness, cutbanks cave. | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| Sparr: | | | | | |
| SpB | Severe: cutbanks cave. | Moderate: wetness. | Severe: wetness | Moderate: wetness. | Moderate: wetness. |
| SpC | Severe: cutbanks cave. | Moderate: wetness. | Severe: wetness | Moderate: wetness, slope. | Moderate: wetness. |
| [1] SuB: | | | | | |
| Sparr part | Severe: cutbanks cave. | Moderate: wetness. | Severe: wetness | Moderate: wetness. | Moderate: wetness. |
| Urban land part. | | | | | |
| Tavares: | | | | | |
| TaB | Severe: cutbanks cave. | Slight | Moderate: wetness. | Slight | Slight. |
| Terra Ceia: | | | | | |
| Tc | Severe: wetness, excess humus. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. |
| Terra Ceia variant: | | | | | |
| Te | Severe: wetness excess humus. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. |
| Tomoka: | | | | | |
| To | Severe: wetness, excess humus, cutbanks cave. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, low strength. | Severe: wetness, excess humus, corrosive. | Severe: excess humus, low strength, wetness. |
| Udalfic Arents: | | | | | |
| UaA | Severe: cutbanks cave. | Slight | Slight | Slight | Slight. |
| UaF | Severe: slope | Severe: slope | Severe: slope | Severe: slope | Severe: slope. |
| Urban land: | | | | | |
| Ur. | | | | | |
| Wacahoota: | | | | | |
| WaC | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| Wacahoota variant: | | | | | |
| WgB, WgC | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness, corrosive. | Severe: wetness. |
| Zuber: | | | | | |
| ZuA, ZuB | Moderate: too clayey. | Moderate: shrink-swell, low strength. | Moderate: shrink-swell, low strength. | Moderate: shrink-swell, low strength. | Severe: low strength. |
| ZuC | Moderate: too clayey, slope. | Moderate: shrink-swell, low strength, slope. | Moderate: shrink-swell, low strength, slope. | Severe: slope, shrink-swell, low strength. | Severe: low strength. |

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[1] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

## TABLE 15.—SANITARY FACILITIES

["Shrink-swell" and some of the other terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight" and other terms used to rate soils. Absence of an entry means that the soil was not rated]

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoons | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| Adamsville: | | | | | |
| AdB | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: seepage | Poor: seepage, wetness. |
| Anclote: | | | | | |
| Ae | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, seepage, too sandy. |
| [1] AN: | | | | | |
| Anclote part | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, seepage, too sandy. |
| Tomoka part | Severe: wetness | Severe: wetness, excess humus, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: excess humus, wetness, seepage. |
| Apopka: | | | | | |
| ApB | Slight | Severe: seepage | Severe: too sandy. | Slight | Poor: too sandy, seepage. |
| ApC | Moderate: slope | Severe: seepage, slope. | Severe: too sandy. | Moderate: slope | Poor: too sandy, seepage. |
| Arredondo: | | | | | |
| ArB, ArC | Slight | Severe: seepage | Severe: seepage, too sandy. | Severe: seepage | Poor: too sandy, seepage. |
| [1] AsB: | | | | | |
| Arredondo part | Slight | Severe: seepage | Severe: seepage, too sandy. | Severe: seepage | Poor: too sandy, seepage. |
| Urban land part. | | | | | |
| Astatula: | | | | | |
| AtB | Slight | Severe: seepage | Severe: seepage, too sandy. | Severe: seepage | Poor: too sandy. |
| AtC | Moderate: slope | Severe: seepage, slope. | Severe: seepage, too sandy. | Severe: seepage | Poor: too sandy. |
| Blichton: | | | | | |
| BcA, BcB | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness | Poor: wetness, area reclaim. |
| [1] BdB: | | | | | |
| Blichton part | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness | Poor: wetness, area reclaim. |
| Urban land part. | | | | | |
| Bluff: | | | | | |
| Bf | Severe: percs slowly, wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. | Severe: wetness, floods. | Poor: wetness, too clayey. |
| Boardman: | | | | | |
| BoC, BoD | Severe: percs slowly, wetness. | Severe: wetness | Severe: wetness | Severe: wetness | Poor: wetness. |
| Borrow pits: Bp. | | | | | |
| Candler: | | | | | |
| CaB | Slight | Severe: seepage | Severe: seepage, too sandy. | Severe: seepage | Poor: too sandy. |
| CaC | Moderate: slope | Severe: seepage, slope. | Severe: seepage, too sandy. | Severe: seepage | Poor: too sandy. |

TABLE 15.—SANITARY FACILITIES—Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoons | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| Candler: | | | | | |
| CwA | Slight | Severe: seepage | Severe: seepage | Slight | Poor: too clayey, too sandy. |
| Eaton: | | | | | |
| Ea | Severe: percs slowly, wetness. | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness | Poor: wetness. |
| Electra: | | | | | |
| EcB | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness | Poor: too sandy, wetness. |
| Eureka: | | | | | |
| Er, Es | Severe: percs slowly, wetness. | Severe: wetness | Severe: wetness | Severe: wetness | Poor: wetness. |
| Fellowship: | | | | | |
| FeB, FeC | Severe: percs slowly, wetness. | Moderate: slope | Severe: wetness | Severe: wetness | Poor: wetness, too clayey, area reclaim. |
| Fellowship variant: | | | | | |
| FgB, FgC | Severe: percs slowly, wetness. | Severe: wetness | Severe: wetness, small stones, depth to rock. | Severe: wetness | Poor: wetness, small stones, area reclaim. |
| Flemington: | | | | | |
| FmA | Severe: percs slowly, wetness. | Slight | Severe: wetness, too clayey. | Severe: wetness | Poor: wetness, too clayey. |
| FmB | Severe: percs slowly, wetness. | Moderate: slope | Severe: wetness, too clayey. | Severe: wetness | Poor: wetness, too clayey. |
| Gainesville: | | | | | |
| GaB, GaC | Slight | Severe: seepage | Severe: seepage | Severe: seepage | Fair: seepage, too sandy. |
| Hague: | | | | | |
| HaB, HaC | Slight | Moderate: seepage. | Slight | Slight | Good. |
| [1] HgB: | | | | | |
| Hague part | Slight | Moderate: seepage. | Slight | Slight | Good. |
| Urban land part. | | | | | |
| Holopaw: | | | | | |
| Ho | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, too sandy. |
| Jumper: | | | | | |
| JuB | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness | Poor: too sandy. |
| Kanapaha: | | | | | |
| KaB | Severe: wetness | Severe: wetness, slope. | Severe: wetness, too sandy. | Severe: wetness | Poor: wetness, too sandy, seepage. |
| Kendrick: | | | | | |
| KeA, KeB, KeC | Slight | Moderate: seepage. | Slight | Slight | Good. |
| Lochloosa: | | | | | |
| LoA, LoB, LoC | Severe: wetness | Severe: wetness | Severe: wetness | Moderate: wetness. | Good. |
| Lynne: | | | | | |
| Ly | Severe: wetness, percs slowly. | Severe: wetness | Severe: wetness | Severe: wetness | Poor: too sandy, wetness. |

## TABLE 15.—SANITARY FACILITIES—Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoons | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| Martel:<br>Ma | Severe: percs slowly, wetness. | Severe: wetness | Severe: wetness | Severe: wetness | Poor: wetness, too clayey. |
| Micanopy:<br>McB, McC | Severe: percs slowly, wetness. | Slight | Severe: wetness | Moderate: wetness. | Fair: too clayey. |
| Okeechobee:<br>Ok | Severe: wetness | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage. | Poor: excess humus, wetness. |
| Paisley:<br>Pa | Severe: percs slowly, wetness. | Severe: wetness | Severe: wetness, too clayey. | Severe: wetness | Poor: too clayey, hard to pack. |
| Pamlico:<br>[1] PB:<br>Pamlico part | Severe: wetness, floods. | Severe: wetness, floods, excess humus. | Severe: wetness, floods. | Severe: wetness, floods. | Poor: wetness, excess humus, hard to pack. |
| Martel variant part. | Severe: wetness, percs slowly. | Severe: wetness, excess humus. | Severe: wetness | Severe: wetness | Poor: wetness, excess humus. |
| Pedro:<br>[1] PeB:<br>Pedro part | Severe: depth to rock. | Severe: depth to rock. | Severe: depth to rock. | Severe: seepage | Poor: thin layer. |
| Arredondo part | Slight | Severe: seepage | Severe: seepage, too sandy. | Severe: seepage | Poor: too sandy, seepage. |
| Placid:<br>Pm | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, too sandy, seepage. |
| [1] Pn:<br>Placid part | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, too sandy, seepage. |
| Pompano part | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, seepage, too sandy. |
| Pomona part | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness | Poor: too sandy, wetness. |
| Pomona:<br>Po | Severe: wetness | Severe: wetness | Severe: wetness, too sandy. | Severe: wetness | Poor: too sandy, wetness. |
| Pompano:<br>Pp, Pr | Severe: wetness | Severe: wetness, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: wetness, seepage, too sandy. |
| Sparr:<br>SpB, SpC | Moderate: wetness. | Severe: wetness | Severe: wetness | Moderate: wetness. | Poor: too sandy. |
| [1] SuB:<br>Sparr part | Moderate: wetness. | Severe: wetness | Severe: wetness | Moderate: wetness. | Poor: too sandy. |
| Urban land part. | | | | | |

TABLE 15.—SANITARY FACILITIES—Continued

| Soil name and map symbol | Septic tank absorption fields | Sewage lagoons | Trench sanitary landfill | Area sanitary landfill | Daily cover for landfill |
|---|---|---|---|---|---|
| Tavares:<br>TaB | Moderate: wetness. | Severe: seepage | Severe: wetness, seepage. | Severe: seepage | Poor: seepage, too sandy. |
| Terra Ceia:<br>Tc | Severe: wetness | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage. | Poor: excess humus, wetness. |
| Terra Ceia variant:<br>Te | Severe: wetness | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage, excess humus. | Severe: wetness, seepage. | Poor: excess humus, wetness. |
| Tomoka:<br>To | Severe: wetness | Severe: wetness, excess humus, seepage. | Severe: wetness, seepage. | Severe: wetness, seepage. | Poor: excess humus, wetness, seepage. |
| Udalfic Arents:<br>UaA | Slight | Severe: seepage | Severe: seepage | Moderate: seepage. | Fair: thin layer. |
| UaF | Severe: slope | Severe: slope | Severe: slope | Severe: slope | Poor: slope. |
| Urban land:<br>Ur. | | | | | |
| Wacahoota:<br>WaC | Severe: wetness | Severe: wetness | Severe: wetness | Severe: wetness | Poor: wetness, area reclaim. |
| Wacahoota variant:<br>WgB, WgC | Severe: wetness | Severe: wetness, small stones. | Severe: wetness, small stones. | Severe: wetness | Poor: wetness, small stones, area reclaim. |
| Zuber:<br>ZuA | Severe: percs slowly. | Slight | Moderate: too clayey. | Slight | Fair: too clayey. |
| ZuB | Severe: percs slowly. | Moderate: slope | Moderate: too clayey. | Slight | Fair: too clayey. |
| ZuC | Severe: percs slowly. | Severe: slope | Moderate: too clayey. | Moderate: slope | Fair: too clayey, slope. |

[1] This mapping unit is made up of two or more dominant kinds of soil. See mapping unit description for the composition and behavior of the whole mapping unit.

maintenance is required. Some soils can be improved by reducing or removing the limiting feature, but for most soils this improvement is difficult and costly.

The ratings in tables 14 and 15 do not indicate suitability because suitability is affected not only by soil properties but also by other factors. Most soils can be made suitable for many uses if their limitations are overcome. Soils that have severe limitations for a specified use can be made suitable if intensive treatment needed to overcome the limitations is feasible.

Interpretations for town and country planning other than those in tables 14 and 15 can be made by determining the significant soil properties and correlating these properties with the intended use.

### *Building site development*

The degree and kind of soil limitations that affect shallow excavations, dwellings with and without basements, small commercial buildings, and local roads and streets are indicated in table 14.

*Shallow excavations* are those that require digging or trenching to a depth of less than 6 feet, as for example, excavations for pipelines, sewer lines, phone and power transmission lines, basements, open ditches, and cemeteries. Desirable soil properties are good workability, moderate resistance to sloughing, gentle slopes, no rock outcrops or large stones, and no flooding or high water table.

*Dwellings,* as rated in table 14, are no more than three stores high and are supported by foundation footings in undisturbed soil. The features that affect the rating of a soil for dwellings are those that relate to capacity to support load and resist settlement under load and those that relate to ease of excavation. Soil properties that affect capacity to support load are wetness, susceptibility to flooding, density, plasticity, texture, and shrink-swell potential. Those that affect excavation are wetness, slope, depth to bedrock, and content of stones and rocks.

*Small commercial buildings,* as rated in table 14, are less than three stories high and are supported by foundation footings in undisturbed soil. Features affecting the ratings are the same as those for dwellings. Particularly important are load-supporting capacity for the foundation, ease of excavation for underground utilities, and risk of corrosion on uncoated steel pipes.

*Local roads and streets,* as rated in table 14, have an all-weather surface expected to carry automobile traffic all year. They have a subgrade of underlying soil material; a base consisting of gravel, crushed rock, or soil material stabilized with lime or cement; and a flexible or rigid surface, commonly asphalt or concrete. These roads are graded to shed water and have ordinary provisions for drainage. They are built mainly from soil at hand, and most cuts and fills are less than 6 feet deep.

Soil properties that most affect design and construction of roads and streets are the load-supporting capacity and stability of the subgrade and the workability and quantity of cut and fill material available. The AASHTO and Unified classifications of the soil material, and also the shrink-swell potential, indicate traffic-supporting capacity. Wetness and flooding affect stability of the material. Slope, depth to hard rock, content of stones and rocks, and wetness affect ease of excavation and amount of cut and fill needed to reach an even grade.

### Sanitary facilities

Table 15 indicates the degree and kind of soil limitations affecting septic tank absorption fields, sewage lagoons, sanitary landfill, and daily cover for landfill.

*Septic tank absorption fields* are subsurface systems of tile or perforated pipe that distribute effluent from a septic tank into natural soil. The soil material from a depth of 18 inches to 6 feet is evaluated. The soil properties considered are those that affect both absorption of effluent and construction and operation of the system. Properties that affect absorption are permeability, depth to water table or rock, and susceptibility to flooding. Slope affects difficulty of layout and construction and also the risk of soil erosion, lateral seepage, and downslope flow of effluent. Large rocks or boulders increase construction costs.

*Sewage lagoons* are excavated ponds constructed to hold sewage within a depth of 5 to 10 feet long enough for bacteria to decompose the solids. A lagoon has a nearly level floor and is protected from flooding by sides, or embankments, of compacted soil material. Soil properties that affect the construction and efficiency of lagoons are permeability, organic matter, slope, and depth to bedrock. Those that affect the embankment are the engineering properties of the embankment material as interpreted from the Unified Soil Classification and the number of stones, if any, that influence the ease of excavation and compaction of embankment material.

*Sanitary landfill* refers to a method of disposing of refuse. The waste is spread in thin layers, compacted, and covered with soil throughout the disposal period. Landfill areas are subject to heavy vehicular traffic. Some soil properties that affect suitability for landfill are ease of excavation, hazard of polluting ground water, and trafficability. The best soils have moderately slow permeability, withstand heavy traffic, and are friable and easy to excavate. Unless otherwise stated, the ratings in table 15 apply only to a depth of about 6 feet. Limitation ratings of *slight* or *moderate* may not be valid if trenches are to be much deeper than that. Reliable predictions can be made to a depth of 10 or 15 feet for some soils, but every site should be investigated before it is selected.

In trench sanitary landfill, the refuse is buried daily in a trench, or more frequently if necessary. The refuse is covered with a layer of soil material at least 6 inches thick, generally soil excavated from the trench. When the trench is full, a final cover of soil material at least 2 feet thick is placed over the landfill.

In area sanitary landfill, refuse is placed on the surface in successive layers. The daily and final cover material generally must be imported. A final cover of soil material at least 2 feet thick is placed over the fill.

*Daily cover for landfill* is the soil material used as the daily and final cover for the area sanitary landfill and the final cover for the trench sanitary landfill. In the Marion County Area a number of old abandoned surface mines are used as refuse disposal areas. In many of these areas part or all of the old excavated material piled adjacent to these mines is unsuitable as cover material because the texture varies and the content of coarse fragments and stones is high. For refuse sites where the spoil material is poorly suited, more suitable landfill cover should be obtained from sources away from the site. Therefore, all the soils in the Marion County Area are rated for their suitability as daily cover for landfill. Suitability is based on properties that reflect workability, ease of digging and moving the soil material and spreading it over the refuse during wet and dry periods, slope, permeability, and thickness of the soil material.

## Formation and Classification of Soils

This section defines the sytem for classifying soils and classifies the soils of the Marion County Area according to that system. It describes the major factors of soil formation and shows how they have affected the soils of the area. It also describes the major horizons of the soils and explains some of the main processes in their formation.

## Classification of Soils

Classification consists of an orderly grouping according to a system designed to make it easier to remember soil characteristics and interrelationships. Classification is useful in organizing and applying the results of experience and research. Therefore, the purpose of soil classification is to help us remember the significant characteristics of soils, to assemble our knowledge about the soils, to see their relationships to one another and the whole environment, and to develop principles relating to their behavior and their response to management. First through classification, and then through use of soil maps, we can apply our knowledge of soils to specific tracts of land and furnish interpretations for planned use of the soils.

The narrow categories of classification, such as those used in detailed soil surveys, allow us to organize and apply knowledge about soils in managing farms, fields, and woodlands; in developing rural areas; in engineering work; and in many other ways. Soils are assigned to broad classes to facilitate study and comparison in large areas, such as countries and continents.

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. It is a comprehensive system designed to accommodate all soils. In this system the criteria used as a basis for classification are soil properties that are observable and measurable. The properties are chosen, however, so that the soils of similar genesis, or mode of origin, are grouped. Because this system of classification is under continual study, readers interested in developments of the current system should search the latest literature available.

The current system of classification has six categories. Beginning with the broadest, these categories are order, suborder, great group, subgroup, family, and series. Table 16 shows the classification of each series of the survey area by family, subgroup, and order. Classes of the soil classification are briefly defined in the following paragraphs.

ORDER. Ten soils orders are recognized. They are

TABLE 16.—CLASSIFICATION OF THE SOILS

| Soil | Family | Subgroup | Order |
|---|---|---|---|
| Adamsville | Hyperthermic, uncoated | Aquic Quartzipsamments | Entisols. |
| Anclote | Sandy, siliceous, hyperthermic | Typic Haplaquolls | Mollisols. |
| Apopka | Loamy, siliceous, hyperthermic | Grossarenic Paleudults | Ultisols. |
| Arredondo | Loamy, siliceous, hyperthermic | Grossarenic Paleudults | Ultisols. |
| Astatula | Hyperthermic, uncoated | Typic Quartzipsamments | Entisols. |
| Blichton | Loamy, siliceous, hyperthermic | Arenic Plinthic Paleaquults | Ultisols. |
| Bluff | Fine-loamy, mixed, hyperthermic | Typic Haplaquolls | Mollisols. |
| Boardman | Fine-loamy, siliceous, hyperthermic | Typic Ochraqualfs | Alfisols. |
| Candler | Hyperthermic, uncoated | Typic Quartzipsamments | Entisols. |
| Eaton | Clayey, mixed, hyperthermic | Arenic Albaqualfs | Alfisols. |
| Electra | Sandy, siliceous, hyperthermic | Arenic Ultic Haplohumods | Spodosols. |
| Eureka | Fine, mixed, hyperthermic | Typic Albaqualfs | Alfisols. |
| Fellowship | Fine, montmorillonitic, hyperthermic | Typic Umbraqualfs | Alfisols. |
| Fellowship variant | Clayey-skeletal, montmorillonitic, hyperthermic | Typic Umbraqualfs | Alfisols. |
| Flemington | Very-fine, montmorillonitic, hyperthermic | Typic Albaqualfs | Alfisols. |
| Gainesville | Hyperthermic, coated | Typic Quartzipsamments | Entisols. |
| Hague | Loamy, siliceous, hyperthermic | Arenic Hapludalfs | Alfisols. |
| Holopaw | Loamy, siliceous, hyperthermic | Grossarenic Ochraqualfs | Alfisols. |
| Jumper | Loamy, siliceous, hyperthermic | Arenic Plinthaquic Paleudults | Ultisols. |
| Kanapaha | Loamy, siliceous, hyperthermic | Grossarenic Paleaquults | Ultisols. |
| Kendrick | Loamy, siliceous, hyperthermic | Arenic Paleudults | Ultisols. |
| Lochloosa | Loamy, siliceous, hyperthermic | Aquic Arenic Paleudults | Ultisols. |
| Lynne | Sandy over clayey, siliceous, hyperthermic | Ultic Haplaquods | Spodosols. |
| Martel | Fine, montmorillonitic, hyperthermic | Typic Umbraqualfs | Alfisols. |
| Martel variant | Clayey, mixed, hyperthermic | Arenic Umbric Paleaquults | Ultisols. |
| Micanopy | Fine, mixed, hyperthermic | Aquic Paleudalfs | Alfisols. |
| Okeechobee | Euic, hyperthermic | Hemic Medisaprists | Histosols. |
| Paisley | Fine, montmorillonitic, hyperthermic | Typic Albaqualfs | Alfisols. |
| Pamlico | Sandy or sandy-skeletal, siliceous, dysic, thermic | Terric Medisaprists | Histosols. |
| Pedro | Fine-loamy, siliceous, hyperthermic, shallow | Typic Hapludalfs | Alfisols. |
| Placid | Sandy, siliceous, hyperthermic | Typic Humaquepts | Inceptisols. |
| Pomona | Sandy, siliceous, hyperthermic | Ultic Haplaquods | Spodosols. |
| Pompano | Siliceous, hyperthermic | Typic Psammaquents | Entisols. |
| Sparr | Loamy, siliceous, hyperthermic | Grossarenic Paleudults | Ultisols. |
| Tavares | Hyperthermic, uncoated | Typic Quartzipsamments | Entisols. |
| Terra Ceia | Euic, hyperthermic | Typic Medisaprists | Histosols. |
| Terra Ceia variant | Dysic, hyperthermic | Typic Medisaprists | |
| Tomoka | Loamy, siliceous, dysic, hyperthermic | Terric Medisaprists | Histosols. |
| Udalfic Arents. | | | |
| Wacahoota | Loamy, siliceous, hyperthermic | Arenic Paleaquults | Ultisols. |
| Wacahoota variant | Loamy-skeletal, siliceous, hyperthermic | Arenic Plinthic Paleaquults | Ultisols. |
| Zuber | Fine, mixed, hyperthermic | Ultic Hapludalfs | Alfisols. |

Alfisols, Aridisols, Entisols, Histosols, Inceptisols, Mollisols, Oxisols, Spodosols, Ultisols, and Vertisols. Seven of the ten orders are represented in the Marion County Area. They are Alfisols, Entisols, Histosols, Inceptisols, Mollisols, Spodosols, and Ultisols. Properties used to differentiate among soil orders are those that tend to give broad climatic groupings of soils. Two exceptions are Entisols and Histosols, which occur in many different climates. Each order is identified by a word of three or four syllables ending in *sol* (Ent-i-sol).

SUBORDER. Each order is divided into suborders, which are based primarily on those soil characteristics that seem to produce classes with the greatest genetic similarity. The suborders narrow the broad climatic range permitted in the orders. The soil properties used to separate suborders are mainly those that reflect either the presence or absence of waterlogging or soil differences resulting from the climate or vegetation. Each suborder is identified by a word of two syllables. The last syllable indicates the order. An example is *Psamment* (*Psamm,* meaning sandy, and *ent,* from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of uniformity in the kinds and sequence of major soil horizons and features. The horizons considered are those in which clay, iron, or humus have accumulated; those that have pans that interfere with growth of roots, movement of water, or both; and thick, dark colored surface horizons. Among the features considered are the self-mulching properties of clay, soil temperature, major differences in chemical composition (mainly calcium, magnesium, sodium, and potassium), and the dark red and dark brown colors associated with basic rock. Each great group is identified by a word of three or four syllables; a prefix is added to the name of the suborder. An example is Quartzipsamments (*Quartzi,* meaning very high in quartz, *psamm,* for sandy, and *ent,* from Entisols).

SUBGROUP. Each great group is divided into subgroups, one representing the central, or typic, segment of the group, and others called intergrades, which have properties of the group and also one or more properties of another great group, suborder, or order. Subgroups also represent intergrades outside of the range of any other great group, suborder, or order. Each subgroup is identified by one or more adjectives before the name of the great group. An example is Aquic Quartzipsamments (wet Quartzipsamments).

FAMILY. Soil families are established within a subgroup primarily on the basis of properties important to the growth of plants or the behavior of soils when used for engineering. Among the properties considered are texture, mineralogy, reaction, soil temperature, permeability, thickness of horizons, and consistence. A family name consists of a series of adjectives preceding the subgroup name. The adjectives are the class names for soil qualities, such as texture and mineralogy, that are used as family differentiae. An example is the hyperthermic, uncoated family of Aquic Quartzipsamments.

SERIES. A series is a group of soils having horizons that are similar in all important characteristics, except for texture of the surface layer, and are similar in arrangement in the profile.

## Factors of Soil Formation

Soil forms through the physical and chemical weathering of deposited or accumulated geologic material. The kinds of soil that form are determined by the physical and mineralogical composition of the parent material; the climate under which soil material has existed since accumulation; the plant and animal life on and in the soil; the relief, or lay of the land; and the length of time the forces of soil formation have acted on the soil material.

Climate and vegetation are active factors of soil genesis. They act on the parent material that has accumulated through weathering and slowly change it to a natural body that has genetically related horizons. The effect of climate and vegetation is conditioned by relief. The parent material affects the kind of profile that can be formed and, in extreme cases, determines it almost entirely. Finally, time is needed for changing the parent material into a mature soil. The length of time is short or long, but some time is always required for the formation of soil horizons. Usually a long time is required for the formation of a distinct horizon. The combined past effects of the five main factors of soil formation are of major importance in determining the present character of the soils.

### *Parent material*

The soils in the survey area formed in thick beds of sandy and clayey material that was transported by the sea, which covered the area a number of times during the Pleistocene period. During the high stands of the sea the Miocene and Pliocene sediments were eroded and redeposited or were reworked on the shallow sea bottom to form marine terraces.

Stratified sand and sandy clay of the Hawthorn Formation are the parent material of many of the soils that have a loamy and fine textured subsoil. The thickness of this formation varies. In the central and western parts of the survey area, the limestone beds of this formation are commonly only a few feet thick and are located only at or near the base of the formation. Phosphatic sand, clayey sand, and clay make up the greater part of the formation. Other formations occurring within the survey area are the Ocala Limestone Group, Fort Preston Formation, Alachua Formation, and Avon Park Formation. Except for a few exposures of very limited extent, the Ocala Limestone Group and the Avon Park Formation are overlain by sandy, clayey, or unconsolidated sandy and clayey material. The Alachua Formation consists of irregularly interbedded deposits of clay, sand, and sandy clay that are phosphatic. The Fort Preston Formation overlies the Hawthorn Formation in the southeastern part of the survey area. It consists of coarse, clastic sediments of middle Miocene and younger age.

The parent material in the survey area differs widely in mineralogical and chemical composition and physical constitution. The main physical differences, such as those among sand, silt, and clay, can be observed in the field. Other differences, such as mineralogical and chemical composition, are important in soil formation and are evident in present physical and chemical characteristics. Many differences among the soils appear to reflect original differences in the geologic materials as they were laid down.

### *Climate*

Precipitation, temperature, humidity, and wind are the climatic forces that act on the parent material of soils. These forces also cause some variation in the plant and animal life on and in the soils and thus influence changes in the parent material and in soil formation.

The Marion County Area has a warm, humid climate. The Atlantic Ocean and the Gulf of Mexico, together with numerous inland lakes, have a moderating effect on summer and winter temperatures. Summer temperatures are fairly uniform from year to year and vary little from day to day. Winter temperatures, however, vary considerably from day to day. Rainfall averages about 55 inches per year.

Because the climate is warm and the rainfall abundant, chemical and biological activity is rapid. The rainfall leaches the soils of many plant nutrients. It also results in a strongly acid reaction in many soils. The translocation of such soluble material as bases and such less soluble material as colloidal matter results in reduced fertility and a more sandy surface layer. For additional information on the climate, refer to the section "Environmental Factors Affecting Soil Use."

### *Plant and animal life*

Plants and animals play an important role in the formation of soils. The kinds and numbers of plants and animals that live in and on the soil are governed largely by climate and, to a lesser and a varying extent, by the other soil-forming factors.

Living organisms furnish organic matter to soils, alter soils through mixing and stirring, and move plant nutrients from the lower to the upper horizons. They also promote changes in structure and porosity.

Micro-organisms, including bacteria and fungi, help to weather and break down minerals and to decompose organic matter. They are most numerous in the upper few inches of the soil. Earthworms and other small animals that inhabit a soil alter its chemical composition and mix it with other soil material.

The original vegetation on the better drained soils was pine, numerous native grasses, low shrubs, and some hardwoods. The natural vegetation on the excessively drained soils is turkey oak, bluejack oak, native grasses, and scattered longleaf pine. The vegetation on the well drained soils is longleaf pine, loblolly pine, oak, hickory, dogwood, sweetgum, and native grasses. The plant cover on the poorly drained soils in the flatwoods is either longleaf pine, slash pine, palmetto, gallberry, and native grasses or slash pine, loblolly pine, shrubs, and native grasses. The native vegetation on the very poorly drained soils in swamps is chiefly a swamp hardwood growth of bay, maple, white oak, cabbage palm, cypress, and water-tolerant grasses.

Man has influenced the formation of soils by clearing the forests, cultivating the soils, draining wet areas, and introducing different kinds of plants. The complex of living organisms that affect soil formation has been greatly changed as a result of man's activities.

### *Relief*

Relief modifies the effects of climate and also influences the formation of soils through its effect on drainage, erosion, temperature, and plant cover. Relief results from the entrenchment of drainageways into the land surface. In places it reduces the percolation of water through the soil. In this survey area the relief is nearly level to strongly sloping.

There are four main topographic features within the Marion County Area. They are the swamps along the Oklawaha and Withlacoochee Rivers, which are part of the flood plains of these rivers; the pine flatwoods adjacent to these swamps in the eastern and southwestern parts of the survey area; the broad ridges of excessively drained, deep sandy soils in the southern part; and the gently sloping to strongly sloping uplands in the central and western parts where the soils are poorly drained to well drained and are loamy and clayey. Elevation above sea level varies to some extent within each of the four major landscapes. It ranges within the survey area from a low of about 33 feet at Dunnellon to a high of 189 feet at Blichton (*4*).

Microrelief within the major landscapes influences specific sites. For example, small areas of flatwoods occur on the sand ridges and the loamy and clayey uplands, and small areas of well drained soils occur in the flatwoods. Internal drainage is not specifically related to elevation.

### *Time*

Time is an important factor in soil formation. The physical and chemical changes brought about by climate, living organisms, and relief are slow. The length of time needed to convert geologic material into soil varies according to the nature of the geologic material and the interaction of the other factors. Some basic minerals from which soils form weather fairly rapidly, whereas other minerals are chemically inert and show little change over long periods. The time required for the translocation of fine particles within the soil, which results in the formation of horizons, varies under different conditions.

In the Marion County Area the dominant geological material is inactive. The sands are almost pure quartz and are highly resistant to weathering. The finer textured silts and clays are the product of earlier weathering.

In terms of geological time, little time has elapsed since the material in which the soils in the survey area formed was laid down or emerged from the sea. The loamy and clayey horizons formed in place through the translocation of clay.

### Processes of Soil Formation

The processes involved in the formation of soil horizons, or horizon differentiation, are accumulation of organic matter, leaching of calcium carbonates and bases, reduction and transfer of iron, and formation and translocation of silicate clay material. In the formation of most soils in the survey area, two or more of these processes have been active.

Most soils have three main horizons—A, B, and C. In many young sandy soils a B horizon has not formed.

The A horizon is the surface layer. It can be either the horizon of maximum organic-matter content, called the A1 horizon, or a combination of the A1 horizon and the horizon of maximum leaching of soluble or suspended material, called the A2 horizon, or the subsurface layer.

The B horizon, which lies directly below the A horizon, is called the subsoil. It is the horizon of maximum accumulation of dissolved or suspended material, such as organic matter, iron, or clay. The B horizon generally is firmer than horizons immediately above and below and in places has blocky structure.

The C horizon is the substratum. It is little affected by the soil-forming processes, but can be somewhat modified by weathering.

Some organic matter has accumulated in the surface layer of all soils in the survey area. As a result, all the soils have an A1 horizon. In many places cultivation has mixed this horizon with material from underlying horizons. The content of organic matter ranges from low to high.

Leaching of carbonates and bases has occurred in nearly all the soils. The leaching of bases in soils generally precedes translocation of silicate clay material. Most soils in the survey area are leached to varying degrees. Leaching has contributed to the formation of horizons.

The process of chemical reduction and transfer of iron, or gleying, is evident in the soils that have a high water table. The well drained soils, however, do not show evidence of this process. Gleying is brought about by wet conditions. Gray color in the subsoil and grayish mottles in other horizons indicate the reduction and loss of iron. Some horizons have reddish brown mottles and concretions, which indicate the segregation of iron.

The translocation of clay, organic matter, or iron oxides has contributed to the formation of horizons in some of the soils of the survey area. Weathering and movement of clay, or alteration of clay, is evident, mainly in the light colored, leached A2 horizon and the loamy or clayey B2 horizon in which clay films are on ped faces and in root channels. A thin B1 horizon that is intermediate in texture between the A2 and B2t horizons is also evident in some soils. Although the translocation of silicate clay has been of minor importance, all the processes of soil formation have been important in the formation of horizons.

The soil-forming processes have resulted in a succession of layers, or horizons, in the soil from the surface downward. These horizons can differ from one another in one or more properties, such as color, texture, structure, consistence, and reaction. They also can be thick or thin. They can be the result of the activity of soil-forming processes at different periods.

## *Laboratory Data*[4]

Particle-size distribution and selected chemical properties of representative soils at selected sites in the Marion County Area are shown in tables 17 and 18. These analyses were conducted and coordinated by the Soil Characterization Laboratory at the University of Florida. Detailed descriptions of the soils, including their location, are under the heading "Descriptions of the Soils."

In addition to the data presented in tables 17 and 18, the results of laboratory analyses for other soils identified in the Marion County Area (profiles sampled in other counties) are on file in the Soil Science Department, University of Florida. These data are useful in classifying the soils and in understanding the genesis of soils.

### Methods of Sampling and Analysis

Samples were taken from pits at carefully selected locations. Most of the data was obtained using methods outlined in Soil Survey Investigations Report No. 1 (*6*). Soil samples were transported to the laboratory where they were air-dried, rolled or crushed, and sieved through a 2-millimeter screen. Particle-size distribution data were obtained by the hydrometer method after dispersion and shaking with sodium hexametaphosphate (*3*). The sand fractions were obtained by dry sieving through a nest of sieves for at least 15 minutes, and the percentage is expressed on an ovendry weight basis. The percentage of silt was determined by adding the percentage of sand and clay and subtracting from 100.

Measurements of pH (soil reaction) were made by procedures 8C1a, 8C1c, and 8C1e using a pH meter (*6*). Extractable bases were obtained by leaching a soil sample with ammonium acetate buffered at pH 7.0 as outlined in procedure 5B1a (*6*). The cations in the extract were then determined separately using a Beckman DU flame spectrophotometer for sodium (Na) and potassium (K). Calcium (Ca) and magnesium (Mg) were determined by atomic absorption. Extractable acidity, which in the past has been referred to as exchangeable acidity or exchangeable hydrogen, was determined by the barium chloride-triethanolamine method 6H1a(*6*). Cation exchange capacity was obtained by summing extractable bases and extractable acidity. Base saturation was derived by dividing the sum of extractable bases by the cation exchange capacity and then multiplying by 100. The content of organic matter was determined by a modification of the Walkley-Black wet-combustion method as outlined in procedure 6A1a (*6*).

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[4] By DR. F. G. CALHOUN, DR. R. E. CALDWELL, and DR. V. W. CARLISLE, professors of soil science, Soil Science Department, University of Florida Agricultural Experiment Stations.

## TABLE 17.—PARTICLE-SIZE DISTRIBUTION OF SELECTED SOILS

[Analyses by Soil Characterization Laboratory, Soil Science Department, University of Florida Agricultural Experiment Stations, Gainesville, Florida. Dashes indicate that no determination was made]

| Soil series and sample number | Horizon | Depth | Very coarse sand (2–1 mm) | Coarse sand (1–0.5 mm) | Medium sand (0.5–0.25 mm) | Fine sand (0.25–0.10 mm) | Very fine sand (0.10–0.05 mm) | Silt 0.05–0.002 mm) | Clay (less than 0.002 mm) |
|---|---|---|---|---|---|---|---|---|---|
| | | *In* | *Pct* | *Pct* | *Pct* | *Pct* | *Pct* | *Pct* | *Pct* |
| Arredondo: | | | | | | | | | |
| S42-119-1 | Ap | 0–7 | 1.2 | 7.0 | 31.2 | 45.9 | 5.9 | 4.4 | 4.4 |
| S42-119-2 | A2 | 7–18 | 1.0 | 6.3 | 32.4 | 46.4 | 5.7 | 2.6 | 5.6 |
| S42-119-3 | B11 | 18–46 | 0.9 | 5.8 | 28.6 | 49.6 | 6.2 | 1.2 | 7.7 |
| S42-119-4 | B12 | 46–65 | 1.6 | 7.5 | 30.6 | 45.4 | 5.2 | 1.7 | 8.0 |
| S42-119-5 | B21t | 65–70 | 1.6 | 7.0 | 28.1 | 44.5 | 5.2 | 1.4 | 12.2 |
| S42-119-6 | B22t | 70–90 | 1.0 | 6.2 | 27.0 | 40.6 | 4.8 | 1.4 | 19.0 |
| Bluff: | | | | | | | | | |
| S42-63-1 | A11 | 0–6 | 0.2 | 6.4 | 24.5 | 19.3 | 2.9 | 9.3 | 37.4 |
| S42-63-2 | A12 | 6–13 | 0.2 | 6.5 | 25.3 | 20.0 | 3.0 | 10.2 | 34.8 |
| S42-63-2 | A13 | 13–17 | 0.6 | 8.5 | 25.8 | 18.4 | 2.6 | 7.5 | 36.6 |
| S42-63-4 | B21g | 17–29 | 0.4 | 6.7 | 26.3 | 22.3 | 3.0 | 5.7 | 35.6 |
| S42-63-5 | B22g | 29–38 | 0.5 | 7.6 | 27.8 | 22.8 | 3.6 | 5.1 | 33.1 |
| S42-63-6 | B3g | 38–60 | 1.5 | 8.3 | 30.6 | 17.3 | 1.4 | 5.6 | 35.3 |
| Boardman: | | | | | | | | | |
| S42-126-1 | Ap | 0–5 | 1.1 | 9.1 | 37.5 | 31.0 | 6.1 | 6.5 | 8.7 |
| S42-126-2 | A2 | 5–16 | 1.7 | 8.9 | 36.0 | 32.0 | 7.1 | 5.8 | 8.5 |
| S42-126-3 | B21tg | 16–22 | 1.0 | 8.6 | 35.4 | 26.8 | 6.7 | 5.7 | 15.8 |
| S42-126-4 | B22tg | 22–34 | 0.8 | 6.7 | 30.7 | 20.4 | 6.2 | 7.4 | 27.8 |
| S42-126-5 | B23tg | 34–45 | 0.2 | 5.1 | 30.4 | 19.0 | 3.3 | 3.6 | 38.3 |
| S42-126-6 | B3g | 45–56 | 1.4 | 6.4 | 27.2 | 16.1 | 4.3 | 3.3 | 41.3 |
| S42-126-7 | Cg | 56–68 | 0.1 | 0.7 | 3.9 | 4.6 | 10.8 | 8.8 | 71.1 |
| Eaton: | | | | | | | | | |
| S42-85-1 | A1 | 0–6 | 0.2 | 2.3 | 20.8 | 45.1 | 17.5 | 10.5 | 4.1 |
| S42-85-2 | A2 | 6–30 | 0.2 | 2.9 | 24.7 | 47.6 | 10.1 | 10.0 | 4.6 |
| S42-85-3 | B21tg | 30–33 | 0.2 | 1.6 | 17.5 | 33.9 | 8.4 | 7.0 | 31.4 |
| S42-85-4 | B22tg | 33–64 | 0.2 | 1.5 | 14.7 | 28.1 | 9.1 | 6.3 | 40.1 |
| S42-85-5 | B23tg | 64–78 | 0.2 | 1.3 | 13.4 | 25.8 | 9.2 | 7.9 | 42.2 |
| S42-85-6 | Cg | 78–92 | 0.2 | 1.8 | 15.0 | 25.9 | 8.3 | 9.3 | 39.5 |
| Flemington: | | | | | | | | | |
| S42-22-1 | A1 | 0–5 | 0.2 | 1.9 | 18.5 | 48.9 | 14.1 | 10.5 | 5.9 |
| S42-22-2 | A2 | 5–9 | 0.3 | 4.8 | 20.2 | 45.8 | 13.9 | 8.5 | 6.5 |
| S42-22-3 | B21tg | 9–27 | --- | --- | --- | --- | --- | 4.6 | 78.5 |
| S42-22-4 | B22tg | 27–41 | 0.2 | 1.0 | 7.9 | 18.9 | 6.4 | 5.2 | 60.4 |
| S42-22-5 | B23tg | 41–53 | 0.1 | 0.9 | 7.3 | 16.1 | 6.0 | 6.3 | 63.3 |
| S42-22-6 | Cg | 53–75 | --- | --- | --- | --- | --- | 6.8 | 70.7 |
| Gainesville: | | | | | | | | | |
| S42-12-1 | A11 | 0–5 | 0.2 | 4.9 | 29.6 | 41.4 | 8.1 | 7.9 | 7.9 |
| S42-12-2 | A12 | 5–10 | 0.1 | 4.2 | 30.2 | 43.2 | 8.3 | 3.8 | 10.2 |
| S42-12-3 | C1 | 10–23 | 0.1 | 3.9 | 29.5 | 42.7 | 8.1 | 4.5 | 11.2 |
| S42-12-4 | C2 | 23–90 | 0.1 | 4.3 | 28.8 | 44.0 | 8.2 | 3.4 | 11.2 |
| Jumper: | | | | | | | | | |
| S42-91-1 | Ap | 0–6 | 0.9 | 4.5 | 30.2 | 51.3 | 5.7 | 4.3 | 3.1 |
| S42-91-2 | A21 | 6–15 | 1.0 | 5.0 | 34.9 | 47.5 | 5.4 | 3.1 | 3.1 |
| S42-91-3 | A22 | 15–29 | 1.1 | 5.2 | 32.2 | 49.6 | 5.8 | 2.2 | 3.9 |
| S42-91-4 | B21t | 29–35 | 1.1 | 4.4 | 24.1 | 36.8 | 4.6 | 2.8 | 26.2 |
| S42-91-5 | B22t | 35–53 | 1.8 | 4.7 | 20.9 | 33.8 | 5.5 | 1.0 | 32.3 |
| S42-91-6 | B23t | 53–69 | 1.8 | 5.8 | 21.9 | 31.6 | 6.4 | 0.4 | 32.1 |
| S42-91-7 | B3g | 69–80 | 3.4 | 9.8 | 27.4 | 29.7 | 5.6 | 2.2 | 21.9 |
| Kanapaha: | | | | | | | | | |
| S42-51-1 | Ap | 0–7 | 0.1 | 4.2 | 24.5 | 55.1 | 10.1 | 4.4 | 1.6 |
| S42-51-2 | A21 | 7–40 | 0.2 | 3.9 | 21.9 | 55.4 | 10.3 | 3.9 | 4.4 |
| S42-51-3 | A22 | 40–48 | 0.2 | 4.7 | 24.2 | 54.9 | 9.8 | 3.2 | 3.0 |
| S42-51-4 | B21tg | 48–55 | 0.1 | 3.2 | 20.1 | 48.4 | 8.9 | 3.0 | 16.3 |
| S42-51-5 | B22tg | 55–70 | 0.1 | 1.0 | 11.6 | 26.9 | 8.6 | 3.8 | 38.0 |
| S42-51-6 | B3g | 70–82 | 0.1 | 1.2 | 12.4 | 37.7 | 10.1 | 5.9 | 32.6 |
| Kendrick: | | | | | | | | | |
| S42-75-1 | Ap | 0–7 | 0.4 | 5.1 | 25.1 | 46.0 | 10.0 | 7.8 | 5.6 |
| S42-75-2 | A31 | 7–20 | 0.8 | 6.0 | 26.1 | 44.4 | 8.8 | 5.2 | 8.7 |
| S42-75-3 | A32 | 20–26 | 0.4 | 5.3 | 23.2 | 45.3 | 9.3 | 5.6 | 10.9 |

TABLE 17.—PARTICLE-SIZE DISTRIBUTION OF SELECTED SOILS—Continued

| Soil series and sample number | Horizon | Depth | Very coarse sand (2–1 mm) | Coarse sand (1–0.5 mm) | Medium sand (0.5–0.25 mm) | Fine sand (0.25–0.10 mm) | Very fine sand (0.10–0.05 mm) | Silt 0.05–0.002 mm) | Clay (less than 0.002 mm) |
|---|---|---|---|---|---|---|---|---|---|
| | | *In* | *Pct* | *Pct* | *Pct* | *Pct* | *Pct* | *Pct* | *Pct* |
| **Kendrick:** | | | | | | | | | |
| S42-75-4 | B21t | 26–32 | 0.8 | 5.4 | 21.3 | 37.2 | 7.4 | 6.0 | 21.9 |
| S42-75-5 | B22t | 32–45 | 0.8 | 5.1 | 20.4 | 35.7 | 8.1 | 4.8 | 25.1 |
| S42-75-6 | B23t | 45–62 | 0.6 | 4.3 | 19.6 | 33.6 | 7.0 | 3.9 | 31.0 |
| S42-75-7 | B24t | 62–70 | 0.4 | 3.5 | 19.2 | 31.9 | 6.2 | 2.7 | 36.1 |
| S42-75-8 | B3 | 70–79 | 0.1 | 3.4 | 19.9 | 38.2 | 5.1 | 3.9 | 29.4 |
| **Lochloosa:** | | | | | | | | | |
| S42-53-1 | Ap | 0–7 | 0.2 | 3.2 | 25.8 | 50.8 | 8.9 | 7.8 | 3.3 |
| S42-53-2 | A21 | 7–17 | 0.2 | 3.6 | 27.5 | 51.5 | 8.4 | 4.0 | 4.8 |
| S42-53-3 | A22 | 17–28 | 0.4 | 4.6 | 25.9 | 50.0 | 8.3 | 4.5 | 6.3 |
| S42-53-4 | B21t | 28–32 | 0.4 | 4.9 | 23.3 | 43.5 | 7.2 | 4.7 | 16.0 |
| S42-53-5 | B22t | 32–35 | 0.2 | 3.4 | 19.2 | 37.9 | 6.7 | 4.7 | 27.9 |
| S42-53-6 | B2tg | 35–57 | 0.2 | 3.5 | 21.0 | 37.0 | 5.1 | 3.6 | 29.6 |
| S42-53-7 | B3g | 57–69 | 0.2 | 2.6 | 18.5 | 34.8 | 3.1 | 2.6 | 38.2 |
| S42-53-8 | Cg | 69–75 | 0.1 | 2.2 | 19.1 | 48.6 | 3.0 | 0.8 | 26.2 |
| **Lynne:** | | | | | | | | | |
| S42-94-1 | A1 | 0–6 | 0.5 | 10.0 | 50.8 | 30.2 | 2.9 | 5.3 | 0.3 |
| S42-94-2 | A21 | 6–13 | 0.3 | 9.0 | 45.6 | 36.0 | 5.9 | 2.9 | 0.3 |
| S42-94-3 | A22 | 13–20 | 0.6 | 9.2 | 41.5 | 38.9 | 6.5 | 3.0 | 0.3 |
| S42-94-4 | B21h | 20–24 | 0.6 | 10.2 | 37.7 | 30.8 | 4.2 | 8.0 | 8.5 |
| S42-94-5 | B22h | 24–31 | 0.7 | 9.8 | 35.9 | 34.0 | 5.6 | 6.5 | 7.5 |
| S42-94-6 | A'2 | 31–33 | 0.6 | 10.9 | 41.1 | 35.4 | 5.6 | 3.6 | 2.8 |
| S42-94-7 | B'21tg | 33–38 | 0.4 | 7.2 | 28.4 | 25.4 | 4.8 | 2.7 | 31.1 |
| S42-94-8 | B'22tg | 38–67 | 0.4 | 7.2 | 25.0 | 18.4 | 2.6 | 2.0 | 44.3 |
| **Martel:** | | | | | | | | | |
| S42-124-1 | A11 | 0–14 | 0.1 | 1.9 | 18.4 | 22.7 | 8.0 | 20.6 | 28.3 |
| S42-124-2 | A12 | 14–19 | 0.0 | 1.6 | 17.0 | 23.3 | 10.2 | 23.6 | 24.3 |
| S42-124-3 | B2tg | 19–36 | 0.1 | 2.1 | 17.6 | 23.0 | 7.8 | 12.5 | 36.9 |
| S42-124-4 | B2tg | 36–57 | 0.1 | 1.8 | 16.7 | 18.4 | 5.8 | 8.9 | 48.3 |
| S42-124-5 | Cg | 57–72 | 0.1 | 2.2 | 17.2 | 19.9 | 6.6 | 10.6 | 43.4 |
| **Micanopy:** | | | | | | | | | |
| S42-68-1 | Ap | 0–5 | 0.2 | 3.1 | 22.7 | 53.0 | 9.2 | 8.2 | 3.6 |
| S42-68-2 | A21 | 5–7 | 0.1 | 2.3 | 21.8 | 55.2 | 9.5 | 6.5 | 4.6 |
| S22-68-3 | A22 | 7–15 | 0.1 | 2.6 | 21.0 | 53.1 | 10.6 | 5.6 | 7.0 |
| S42-68-4 | B21t | 15–20 | 0.2 | 2.2 | 16.0 | 41.0 | 7.9 | 4.3 | 28.4 |
| S42-68-5 | B22t | 20–26 | 0.1 | 1.4 | 12.9 | 32.9 | 8.0 | 6.0 | 38.7 |
| S42-68-6 | B23tg | 26–45 | 0.2 | 1.4 | 12.2 | 27.2 | 5.5 | 5.3 | 48.2 |
| S42-68-7 | B24tg | 45–53 | 0.1 | 1.6 | 14.4 | 32.1 | 5.9 | 4.6 | 41.3 |
| S42-68-8 | B25tg | 53–57 | 0.1 | 1.1 | 11.0 | 24.9 | 5.0 | 4.1 | 53.8 |
| S42-68-9 | B3g | 57–68 | 0.0 | 2.0 | 16.5 | 35.5 | 5.7 | 3.9 | 36.4 |
| **Sparr:** | | | | | | | | | |
| S42-65-1 | Ap1 | 0–5 | 0.1 | 3.5 | 26.6 | 55.0 | 5.9 | 7.1 | 1.8 |
| S42-65-2 | Ap2 | 5–8 | 0.1 | 3.4 | 26.2 | 56.4 | 5.9 | 5.6 | 2.4 |
| S42-65-3 | A2 | 8–39 | 0.1 | 3.5 | 26.9 | 57.5 | 5.1 | 4.7 | 2.2 |
| S42-65-4 | A3 | 39–48 | 0.1 | 4.8 | 26.4 | 54.7 | 5.8 | 4.4 | 3.8 |
| S42-65-5 | B21t | 48–56 | 0.2 | 3.8 | 22.3 | 45.5 | 4.7 | 4.3 | 19.2 |
| S42-65-6 | B22tg | 56–72 | 0.7 | 3.2 | 19.4 | 32.6 | 3.2 | 3.2 | 37.7 |
| S42-65-7 | B3g | 72–99 | 0.0 | 2.8 | 21.9 | 41.0 | 4.6 | 4.2 | 25.5 |
| **Wacahoota:** | | | | | | | | | |
| S42-125-1 | Ap | 0–5 | 0.4 | 9.5 | 42.6 | 25.6 | 6.7 | 7.8 | 7.4 |
| S42-125-2 | A2 | 5–29 | 0.8 | 8.5 | 39.4 | 28.7 | 9.0 | 4.9 | 8.7 |
| S42-125-3 | B21tg | 29–38 | 0.4 | 8.0 | 30.7 | 16.7 | 5.0 | 4.2 | 35.0 |
| S42-125-4 | B22tg | 38–54 | 0.5 | 10.3 | 34.3 | 11.7 | 4.4 | 6.4 | 32.4 |
| S42-125-5 | B3g | 54–78 | 0.3 | 8.9 | 39.3 | 14.6 | 3.7 | 7.2 | 26.0 |
| **Zuber:** | | | | | | | | | |
| S42-123-1 | Ap | 0–7 | 2.0 | 6.8 | 22.4 | 44.4 | 11.1 | 8.3 | 5.0 |
| S42-123-2 | A3 | 7–15 | 1.6 | 6.2 | 23.3 | 44.1 | 12.3 | 6.2 | 6.3 |
| S42-123-3 | B21t | 15–20 | 2.1 | 6.4 | 17.7 | 33.2 | 9.6 | 6.6 | 24.4 |
| S42-123-4 | B22t | 20–27 | 1.4 | 4.9 | 14.1 | 24.6 | 7.7 | 4.1 | 43.2 |
| S42-123-5 | B22t | 27–54 | 1.5 | 5.0 | 16.2 | 28.4 | 8.5 | 3.3 | 37.1 |
| S42-123-6 | B23t | 54–70 | --- | --- | --- | --- | --- | 9.8 | 61.6 |
| S42-123-7 | B3 | 70–77 | 3.0 | 3.5 | 5.6 | 12.1 | 6.9 | 10.3 | 58.6 |
| S42-123-8 | C | 77–82 | 0.2 | 0.6 | 2.6 | 6.0 | 6.5 | 9.6 | 74.5 |

## TABLE 18.—CHEMICAL ANALYSES

[Analyses by Soil Characterization Laboratory, Soil Science Department,

| Soil series and sample number | Horizon | Depth | $H_2O$ 1:1 | 0.01M Cacl$_2$ 1:2 | 1N KCl 1:1 | Extractable bases | |
|---|---|---|---|---|---|---|---|
| | | | | | | Ca | Mg |
| | | *In* | *pH* | *pH* | *pH* | *Meq/100gm* | *Meq/100gm* |
| Arredondo: | | | | | | | |
| S42-119-1 | Ap | 0–7 | 5.4 | 4.8 | 4.5 | 1.1 | 0.2 |
| S42-119-2 | A2 | 7–18 | 5.8 | 5.1 | 4.7 | 0.6 | 0.1 |
| S42-119-3 | B11 | 18–46 | 5.4 | 4.6 | 4.3 | 0.6 | 0.1 |
| S42-119-4 | B12 | 46–65 | 5.5 | 4.9 | 4.5 | 0.7 | 0.1 |
| S42-119-5 | B21t | 65–70 | 5.6 | 4.9 | 4.5 | 0.9 | 0.6 |
| S42-119-6 | B22t | 70–90 | 5.4 | 4.6 | 4.4 | 1.3 | 0.8 |
| Bluff: | | | | | | | |
| S42-63-1 | A11 | 0–6 | 5.4 | 5.5 | 5.1 | 30.3 | 9.1 |
| S42-63-2 | A12 | 6–13 | 5.4 | 5.5 | 5.1 | 28.7 | 8.4 |
| S42-63-3 | A13 | 13–17 | 6.4 | 6.4 | 6.1 | 26.0 | 9.7 |
| S42-63-4 | B21g | 17–29 | 7.0 | 6.9 | 6.9 | 31.4 | 9.2 |
| S42-63-5 | B22g | 29–38 | 7.3 | 7.1 | 7.0 | (2) | 9.3 |
| S42-63-6 | B3g | 38–60 | 7.5 | 7.3 | 7.1 | (2) | 8.5 |
| Boardman: | | | | | | | |
| S42-126-1 | Ap | 0–5 | 5.7 | 5.2 | 4.7 | 3.3 | 0.8 |
| S42-126-2 | A2 | 5–16 | 5.6 | 5.0 | 4.3 | 2.0 | 0.4 |
| S42-126-3 | B21tg | 16–22 | 5.4 | 4.6 | 4.0 | 3.1 | 1.1 |
| S42-126-4 | B22tg | 22–34 | 5.3 | 4.4 | 3.7 | 5.8 | 2.4 |
| S42-126-5 | B23tg | 34–45 | 5.2 | 4.3 | 3.6 | 7.8 | 3.4 |
| S42-126-6 | B3g | 45–56 | 5.3 | 4.8 | 4.1 | 12.5 | 5.9 |
| S42-126-7 | Cg | 56–68 | 5.3 | 5.2 | 4.5 | 28.1 | 14.5 |
| Eaton: | | | | | | | |
| S42-85-1 | A1 | 0–6 | 4.5 | 4.0 | 3.9 | 1.2 | 0.6 |
| S42-85-2 | A2 | 6–30 | 5.2 | 4.4 | 3.8 | 0.9 | 0.4 |
| S42-85-3 | B21tg | 30–33 | 4.8 | 4.0 | 3.7 | 5.8 | 1.7 |
| S42-85-4 | B22tg | 33–64 | 4.9 | 4.0 | 3.8 | 8.5 | 1.8 |
| S42-85-5 | B23tg | 64–78 | 4.9 | 4.2 | 3.7 | 17.2 | 2.1 |
| S42-85-6 | Cg | 78–92 | 5.0 | 4.4 | 3.9 | 23.3 | 2.7 |
| Flemington: | | | | | | | |
| S42-22-1 | A1 | 0–5 | 4.5 | 4.1 | (3) | 1.5 | 0.5 |
| S42-22-2 | A2 | 5–9 | 5.8 | 5.1 | 4.7 | 3.9 | 0.4 |
| S42-22-3 | B21tg | 9–27 | 4.8 | 4.0 | 3.4 | 11.7 | 5.9 |
| S42-22-4 | B22tg | 27–41 | 4.9 | 3.9 | 3.3 | 11.5 | 4.8 |
| S42-22-5 | B23tg | 41–53 | 4.8 | 3.9 | 3.2 | 14.1 | 5.7 |
| S42-22-6 | Cg | 53–75 | 4.6 | 4.0 | 3.2 | 19.6 | 6.9 |
| Gainesville: | | | | | | | |
| S42-12-1 | A11 | 0–5 | 4.8 | 4.7 | 4.4 | 1.5 | 0.5 |
| S42-12-2 | A12 | 5–10 | 5.3 | 4.9 | 4.6 | 1.3 | 0.6 |
| S42-12-3 | C1 | 10–23 | 5.7 | 5.1 | 4.7 | 1.4 | 0.7 |
| S42-12-4 | C2 | 23–90 | 5.8 | 5.1 | 4.7 | 0.7 | 0.4 |
| Jumper: | | | | | | | |
| S42-91-1 | Ap | 0–6 | 4.8 | 4.3 | 3.2 | 0.4 | 0.2 |
| S42-91-2 | A21 | 6–15 | 4.9 | 4.4 | 3.0 | 0.4 | 0.2 |
| S42-91-3 | A22 | 15–29 | 4.8 | 4.3 | 2.7 | 0.1 | 0.1 |
| S42-91-4 | B21t | 29–35 | 4.9 | 4.0 | 3.6 | 1.0 | 0.6 |
| S42-91-5 | B22t | 35–53 | 4.7 | 4.0 | 3.9 | 0.8 | 0.7 |
| S42-91-6 | B23t | 53–69 | 5.0 | 3.7 | 4.1 | 0.7 | 0.7 |
| S42-91-7 | B3g | 69–80 | 4.7 | 3.9 | 3.9 | 0.4 | 0.5 |
| Kanapaha: | | | | | | | |
| S42-51-1 | Ap | 0–7 | 5.2 | 4.7 | 4.3 | 0.7 | 0.4 |
| S42-51-2 | A21 | 7–40 | 4.6 | 4.2 | 4.3 | 0.3 | 0.1 |
| S42-51-3 | A22 | 40–48 | 4.9 | 4.3 | 4.3 | 0.2 | 0.1 |
| S42-51-4 | B21tg | 48–55 | 4.6 | 4.2 | 3.9 | 1.8 | 0.6 |
| S42-51-5 | B22tg | 55–70 | 4.6 | 3.9 | 3.6 | 4.4 | 1.7 |
| S42-51-6 | B3g | 70–82 | 4.7 | 4.0 | 3.7 | 2.2 | 1.3 |
| Kendrick: | | | | | | | |
| S42-75-1 | Ap | 0–7 | 5.2 | 4.9 | 4.6 | 1.5 | 0.3 |
| S42-75 2 | A1 | 7–20 | 5.3 | 4.7 | 4.4 | 1.1 | 0.3 |
| S42-75-3 | A2 | 20–26 | 5.2 | 4.7 | 4.4 | 1.7 | 0.6 |
| S42-75-4 | B21t | 26–32 | 5.2 | 4.6 | 4.3 | 3.1 | 1.5 |
| S42-75-5 | B22t | 32–45 | 5.3 | 4.6 | 4.4 | 3.4 | 1.7 |

## OF SELECTED SOILS

University of Florida Agricultural Experiment Stations, Gainesville, Florida]

| Extractable bases—Continued | | Extractable acidity | Cation exchange capacity | Base saturation | Organic matter |
|---|---|---|---|---|---|
| Na | K | | | | |
| *Meq/100gm* | *Meq/100gm* | *Meq/100gm* | *Meq/100gm* | *Pct* | *Pct* |
| 0.1 | [1] tr | 5.2 | 6.6 | 21 | 1.1 |
| 0.1 | tr | 3.6 | 4.4 | 18 | 0.1 |
| 0.1 | tr | 1.6 | 2.4 | 33 | 0.2 |
| tr | tr | 3.0 | 3.8 | 21 | 0.1 |
| tr | tr | 4.7 | 6.2 | 24 | 0.1 |
| 0.1 | tr | 6.8 | 8.9 | 22 | 0.2 |
| | | | | | |
| 1.2 | 0.1 | 1.5 | 42.2 | 96 | 6.0 |
| 1.2 | 0.1 | 0.4 | 38.8 | 99 | 5.3 |
| 1.8 | 0.1 | 0.3 | 37.9 | 99 | 2.7 |
| 1.6 | tr | 0.1 | 41.3 | 99 | 1.1 |
| 1.8 | tr | 0.3 | (2) | (2) | 0.5 |
| 1.5 | tr | 0.2 | (2) | (2) | 0.1 |
| | | | | | |
| 0.1 | 0.1 | 7.9 | 12.2 | 35 | 2.8 |
| 0.1 | tr | 7.3 | 9.8 | 26 | 1.1 |
| 0.2 | tr | 9.3 | 13.7 | 32 | 0.5 |
| 0.3 | 0.1 | 14.4 | 23.0 | 37 | 0.5 |
| 0.5 | 0.1 | 14.3 | 26.1 | 45 | 0.4 |
| 0.8 | 0.1 | 13.8 | 33.1 | 58 | 0.3 |
| 1.3 | 0.9 | 20.6 | 65.4 | 69 | 0.4 |
| | | | | | |
| 0.1 | tr | 5.0 | 6.9 | 28 | 1.7 |
| 0.1 | tr | 2.2 | 3.6 | 39 | 0.3 |
| 0.3 | tr | 14.8 | 22.6 | 35 | 0.3 |
| 0.3 | tr | 17.2 | 27.8 | 38 | 0.4 |
| 0.3 | tr | 18.8 | 38.4 | 51 | 0.3 |
| 0.4 | tr | 22.4 | 48.8 | 54 | 0.1 |
| | | | | | |
| 0.0 | 0.1 | 11.5 | 13.6 | 15 | 3.1 |
| 0.1 | tr | 8.4 | 12.8 | 34 | 1.4 |
| 0.5 | 0.3 | 31.0 | 49.4 | 37 | 1.1 |
| 0.5 | 0.2 | 28.0 | 45.0 | 38 | 0.6 |
| 0.6 | 0.2 | 29.4 | 50.0 | 41 | 0.4 |
| 0.7 | 0.2 | 26.9 | 54.3 | 50 | 0.3 |
| | | | | | |
| tr | 0.1 | 12.4 | 14.5 | 14 | 1.6 |
| tr | tr | 8.6 | 10.5 | 18 | 0.7 |
| tr | tr | 7.0 | 9.1 | 23 | 0.2 |
| tr | tr | 8.2 | 9.3 | 12 | 0.2 |
| | | | | | |
| 0.1 | tr | 3.2 | 3.9 | 18 | 0.9 |
| tr | tr | 1.6 | 2.2 | 27 | 0.4 |
| 0.1 | 0.1 | 1.9 | 2.3 | 17 | 0.2 |
| 0.1 | tr | 8.0 | 9.7 | 18 | 0.2 |
| tr | tr | 8.3 | 9.8 | 15 | 0.3 |
| 0.1 | tr | 10.1 | 11.6 | 13 | 0.3 |
| 0.1 | tr | 7.9 | 8.9 | 11 | 0.1 |
| | | | | | |
| tr | tr | 1.2 | 2.3 | 48 | 0.5 |
| 0.1 | tr | 1.2 | 1.7 | 29 | 0.8 |
| tr | tr | 1.8 | 2.1 | 14 | 0.1 |
| 0.1 | 0.1 | 8.0 | 10.6 | 25 | 0.2 |
| 0.1 | 0.1 | 13.6 | 19.9 | 32 | 0.2 |
| 0.1 | tr | 12.0 | 15.6 | 23 | 0.2 |
| | | | | | |
| tr | tr | 6.4 | 8.2 | 22 | 1.0 |
| 0.1 | tr | 4.6 | 6.1 | 25 | 0.2 |
| 0.2 | tr | 5.2 | 7.7 | 32 | 0.4 |
| 0.1 | 0.1 | 10.8 | 15.6 | 31 | 0.2 |
| 0.1 | 0.1 | 11.0 | 16.3 | 33 | 0.2 |

### TABLE 18.—CHEMICAL ANALYSES

| Soil series and sample number | Horizon | Depth | $H_2O$ 1:1 | 0.01M Cacl 1:2 | 1N KCl 1:1 | Extractable bases | |
|---|---|---|---|---|---|---|---|
| | | | | | | Ca | Mg |
| | | *In* | *pH* | *pH* | *pH* | *Meq/100gm* | *Meq/100gm* |
| **Kendrick:** | | | | | | | |
| S42-75-6 | B23t | 45–62 | 5.5 | 4.7 | 4.3 | 4.1 | 2.5 |
| S42-75-7 | B24t | 62–70 | 5.5 | 4.7 | 4.3 | 4.1 | 3.3 |
| S42-75-8 | B3 | 70–79 | 4.8 | 3.8 | 3.9 | 1.6 | 0.7 |
| **Lochloosa:** | | | | | | | |
| S42-53-1 | Ap | 0–7 | 4.9 | 4.3 | 4.0 | 1.0 | 0.2 |
| S42-53-2 | A21 | 7–17 | 5.1 | 4.4 | 4.2 | 0.5 | 0.2 |
| S42-53-3 | A22 | 17–28 | 5.2 | 4.2 | 4.2 | 0.4 | 0.2 |
| S42-53-4 | B21t | 28–32 | 5.1 | 3.9 | 3.9 | 1.0 | 1.0 |
| S42-53-5 | B22t | 32–35 | 4.8 | 4.0 | 3.7 | 1.9 | 2.0 |
| S42-53-6 | B23tg | 35–57 | 4.6 | 4.0 | 3.8 | 1.8 | 2.5 |
| S42-53-7 | B3g | 57–69 | 4.8 | 4.0 | 3.7 | 1.7 | 1.9 |
| S42-53-8 | Cg | 69–75 | 4.6 | 3.9 | 3.8 | 1.1 | 1.6 |
| **Lynne:** | | | | | | | |
| S42-94-1 | A1 | 0–6 | 4.5 | 3.6 | 3.5 | 0.8 | 0.3 |
| S42-94-2 | A21 | 6–13 | 4.7 | 4.0 | 4.0 | 0.1 | tr |
| S42-94-3 | A22 | 13–20 | 4.5 | 4.2 | 4.3 | tr | tr |
| S42-94-4 | B21h | 20–24 | 4.0 | 3.4 | 3.5 | tr | 0.2 |
| S42-94-5 | B22h | 24–31 | 4.1 | 3.7 | 3.7 | 0.0 | 0.1 |
| S42-94-6 | A′2 | 31–33 | 5.3 | 4.0 | 4.0 | tr | 0.2 |
| S42-94-7 | B′21tg | 33–38 | 5.0 | 4.2 | 4.1 | tr | 0.2 |
| S42-94-8 | B′22tg | 38–67 | 4.8 | 4.0 | 3.8 | tr | 0.5 |
| **Martel:** | | | | | | | |
| S42-104-1 | A11 | 0–14 | 4.6 | 4.3 | 3.9 | 4.2 | 1.4 |
| S42-104-2 | A12 | 14–19 | 5.1 | 4.2 | 3.8 | 2.7 | 1.0 |
| S42-104-3 | B22tg | 19–36 | 4.8 | 4.0 | 3.7 | 9.0 | 1.8 |
| S42-104-4 | B23tg | 36–57 | 4.7 | 3.9 | 3.5 | 10.3 | 2.3 |
| S42-104-5 | Cg | 57–72 | 4.7 | 3.9 | 3.5 | 15.4 | 2.3 |
| **Micanopy:** | | | | | | | |
| S42-68-1 | Ap | 0–5 | 4.5 | 4.1 | 4.0 | 2.0 | 0.5 |
| S42-68-2 | A21 | 5–7 | 5.0 | 4.5 | 4.4 | 0.4 | 0.1 |
| S42-68-3 | A22 | 7–15 | 5.1 | 4.5 | 4.4 | 1.2 | 0.2 |
| S42-68-4 | B21t | 15–20 | 4.9 | 4.2 | 4.0 | 2.5 | 1.0 |
| S42-68-5 | B22t | 20–26 | 4.7 | 4.0 | 3.7 | 2.2 | 1.1 |
| S42-68-6 | B23tg | 26–45 | 4.5 | 4.0 | 3.8 | 3.7 | 1.2 |
| S42-68-7 | B24tg | 45–53 | 4.7 | 4.0 | 3.7 | 6.7 | 0.5 |
| S42-68-8 | B25tg | 53–57 | 4.8 | 4.1 | 3.7 | 11.3 | 0.6 |
| S42-68-9 | B3g | 57–68 | 5.1 | 4.4 | 4.0 | 12.5 | 0.4 |
| **Sparr:** | | | | | | | |
| S42-65-1 | Ap1 | 0–5 | 4.8 | 4.5 | 4.5 | 1.0 | 0.2 |
| S42-65-2 | Ap2 | 5–8 | 5.2 | 4.6 | 4.6 | 0.8 | 0.2 |
| S42-65-3 | A2 | 8–39 | 5.4 | 4.8 | 4.7 | 0.5 | 0.1 |
| S42-65-4 | A3 | 39–48 | 5.2 | 4.6 | 4.6 | 0.6 | 0.2 |
| S42-65-5 | B21t | 48–56 | 5.2 | 4.5 | 4.3 | 2.3 | 1.4 |
| S42-65-6 | B22tg | 56–72 | 4.9 | 4.1 | 3.9 | 3.7 | 2.3 |
| S42-65-7 | B3g | 72–99 | 4.8 | 4.0 | 3.9 | 2.1 | 1.4 |
| **Wacahoota:** | | | | | | | |
| S42-125-1 | Ap | 0–5 | 5.5 | 4.9 | 4.6 | 3.6 | 0.7 |
| S42-125-2 | A2 | 5–29 | 5.2 | 4.8 | 4.4 | 1.8 | 0.7 |
| S42-125-3 | B21tg | 29–38 | 5.0 | 4.2 | 3.7 | 3.9 | 3.0 |
| S42-125-4 | B22tg | 38–54 | 4.6 | 3.9 | 3.4 | 2.3 | 2.4 |
| S42-125-5 | B3g | 54–78 | 4.6 | 4.0 | 3.5 | 2.7 | 2.3 |
| **Zuber:** | | | | | | | |
| S42-123-1 | Ap | 0–7 | 5.8 | 5.1 | 4.8 | 2.5 | 0.8 |
| S42-123-2 | A3 | 7–15 | 6.0 | 5.2 | 4.8 | 1.6 | 0.3 |
| S42-123-3 | B21t | 15–20 | 5.8 | 5.1 | 4.6 | 5.2 | 1.8 |
| S42-123-4 | B22t | 20–27 | 5.6 | 5.0 | 4.5 | 8.5 | 2.3 |
| S42-123-5 | B22t | 27–54 | 5.8 | 5.0 | 4.5 | 7.7 | 1.7 |
| S42-126-6 | B23t | 54–70 | 5.7 | 5.1 | 4.6 | 23.1 | 4.2 |
| S42-123-7 | B3 | 70–77 | 5.6 | 5.2 | 4.6 | 19.6 | 3.0 |
| S42-123-8 | C | 77–82 | 5.6 | 5.2 | 4.7 | 36.2 | 4.8 |

[1] Trace.
[2] Value omitted because of high calcium content.
[3] No determination was made.

## OF SELECTED SOILS—Continued

| Extractable bases—Continued | | Extractable acidity | Cation exchange capacity | Base saturation | Organic matter |
|---|---|---|---|---|---|
| Na | K | | | | |
| *Meq/100gm* | *Meq/100gm* | *Meq/100gm* | *Meq/100gm* | *Pct* | *Pct* |
| 0.1 | 0.1 | 13.8 | 20.6 | 33 | 0.2 |
| 0.1 | 0.1 | 17.2 | 24.8 | 31 | 0.2 |
| 0.1 | 0.1 | 15.8 | 18.3 | 14 | 0.1 |
| | | | | | |
| tr | 0.1 | 8.0 | 9.3 | 14 | 1.3 |
| tr | 0.1 | 2.6 | 3.4 | 24 | 0.2 |
| 0.1 | 0.1 | 2.0 | 2.8 | 29 | 0.1 |
| tr | 0.2 | 7.2 | 9.4 | 23 | 0.2 |
| 0.1 | 0.2 | 10.6 | 14.8 | 28 | 0.2 |
| tr | 0.2 | 10.8 | 15.3 | 29 | 0.2 |
| 0.1 | 0.2 | 13.0 | 16.9 | 23 | 0.2 |
| 0.1 | 0.1 | 8.8 | 11.7 | 25 | 0.1 |
| | | | | | |
| tr | 0.1 | 5.8 | 8.4 | 14 | 1.9 |
| tr | 0.1 | 0.0 | 0.5 | 40 | 0.4 |
| tr | 0.1 | 0.0 | 0.3 | 33 | 0.6 |
| tr | tr | 26.0 | 25.8 | 1 | 5.9 |
| tr | 0.1 | 26.0 | 27.2 | 1 | 4.1 |
| tr | tr | 1.8 | 2.0 | 10 | 0.5 |
| 0.1 | tr | 15.9 | 16.6 | 2 | 0.8 |
| tr | tr | 20.5 | 21.4 | 3 | 0.5 |
| | | | | | |
| 0.2 | 0.2 | 22.9 | 30.0 | 24 | 6.4 |
| 0.1 | 0.1 | 10.3 | 14.2 | 32 | 1.5 |
| 0.2 | 0.1 | 14.3 | 25.4 | 44 | 0.8 |
| 0.2 | 0.1 | 20.2 | 33.1 | 39 | 0.8 |
| 0.3 | 0.1 | 19.7 | 39.8 | 51 | 0.5 |
| | | | | | |
| 0.1 | tr | 10.4 | 13.0 | 20 | 2.7 |
| 0.1 | tr | 3.2 | 3.8 | 16 | 0.6 |
| 0.1 | tr | 4.2 | 5.7 | 26 | 0.8 |
| 0.1 | tr | 11.6 | 15.2 | 24 | 0.6 |
| 0.2 | tr | 15.4 | 18.9 | 19 | 0.3 |
| 0.2 | 0.1 | 18.6 | 23.8 | 22 | 0.4 |
| 0.1 | 0.1 | 14.4 | 21.8 | 34 | 0.1 |
| 0.2 | 0.1 | 16.8 | 29.0 | 42 | 0.2 |
| 0.1 | 0.1 | 11.2 | 24.3 | 54 | 0.1 |
| | | | | | |
| tr | 0.1 | 4.4 | 5.7 | 23 | 1.0 |
| tr | tr | 3.6 | 4.6 | 22 | 0.7 |
| tr | tr | 1.2 | 1.8 | 33 | 0.3 |
| tr | tr | 1.1 | 1.9 | 42 | 0.2 |
| tr | tr | 8.4 | 12.1 | 31 | 0.2 |
| 0.1 | 0.1 | 20.8 | 27.0 | 23 | 0.2 |
| 0.1 | 0.1 | 13.6 | 17.3 | 21 | 0.1 |
| | | | | | |
| 0.1 | 0.1 | 8.9 | 13.4 | 34 | 3.1 |
| tr | tr | 7.6 | 10.1 | 25 | 0.9 |
| 0.2 | 0.1 | 27.5 | 34.7 | 21 | 1.0 |
| 0.2 | 0.1 | 26.8 | 31.8 | 19 | 0.6 |
| 0.2 | 0.1 | 21.6 | 26.9 | 20 | 0.4 |
| | | | | | |
| tr | 0.4 | 5.9 | 9.6 | 39 | 2.0 |
| tr | 0.2 | 3.8 | 5.8 | 35 | 0.5 |
| 0.1 | 0.1 | 10.2 | 17.2 | 41 | 0.5 |
| 0.1 | 0.1 | 18.5 | 29.5 | 37 | 0.5 |
| 0.1 | 0.1 | 18.7 | 28.3 | 34 | 0.2 |
| 0.1 | 0.2 | 22.3 | 49.9 | 55 | 0.2 |
| 0.1 | 0.2 | 20.3 | 43.2 | 53 | 0.2 |
| 0.2 | 0.3 | 22.5 | 64.0 | 65 | 0.2 |

## *Environmental Factors Affecting Soil Use*

Marion County, which was named in honor of General Francis Marion, was established in 1844. The county seat was temporarily located at Fort King, but in 1846 the present site was selected and was named Ocala after the former Timucuan Indian province Ocali.

The Marion County Area entered a period of prosperous farming after the county was established, but this prosperity temporarily ended with the Civil War. After the war, Silver Springs became popular with sightseers who traveled down the Saint Johns and Oklawaha Rivers to the springs.

The citrus industry also helped the area to recover from the war. Around 1870, large-scale production of citrus began around Orange Lake. The citrus industry thrived until the big freeze of 1894–95, which almost destroyed the industry. The area, however, did not depend entirely on citrus. Phosphate was discovered in 1889, and mining became an important industry. The turpentine and lumber industries also became important.

Following World War I the area began to expand its farming and develop the tourist industry. The beginning of the Gulf-Atlantic Shipping Canal by the Federal Government, although never completed, was important in helping to increase land values and in attracting many new people to the area. Although World War II temporarily halted its growth, the tourist industry has expanded greatly during recent years.

Presently the area is highly diversified in its growth and development. Farming has always played an important role in the development of the area. Tourism is also important. Since about 1960 the area has experienced a tremendous growth in manufacturing and industry. As a result, the population of the area has increased rapidly, from about 51,600 in 1960 to 69,000 in 1970.

### Climate [5]

The climate of the Marion County Area is characterized by long, warm, humid summers and mild, dry winters. Rainfall averages about 55.6 inches annually. An average of about 55 percent of the annual total falls during the period June through September. The other 45 percent is more or less evenly distributed throughout the rest of the year.

The Atlantic Ocean and the Gulf of Mexico, together with numerous inland lakes, have a moderating effect on summer and winter temperatures. Summer temperatures are fairly uniform from year to year and show little day to day variation. Although afternoon temperatures reach 90°F or higher with great regularity during the warmest months, temperatures of 100° or higher seldom occur. Winter temperatures vary considerably from day to day, largely because periodic cold, dry air masses invade from the north. Temperature and precipitation data are listed in table 19.

TABLE 19.—TEMPERATURE AND PRECIPITATION

[All data from Ocala, Marion County. Elevation 65 feet]

| Month | Temperature | | | | Precipitation | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Average daily maximum | Average daily minimum | Average highest maximum | Average lowest minimum | Average total | One year in 10 will have— | | Average number of days with rainfall of— | |
| | | | | | | Less than— | More than— | 0.10 inch | 0.50 inch |
| | °F | °F | °F | °F | In | In | In | | |
| January | 70 | 46 | 82 | 27 | 2.6 | 0.5 | 4.6 | 5 | 2 |
| February | 74 | 49 | 85 | 33 | 3.7 | .7 | 5.6 | 6 | 3 |
| March | 79 | 54 | 89 | 36 | 4.0 | .9 | 8.5 | 6 | 2 |
| April | 84 | 59 | 92 | 46 | 3.7 | .5 | 7.6 | 5 | 3 |
| May | 90 | 65 | 97 | 55 | 3.2 | 1.2 | 7.5 | 5 | 3 |
| June | 92 | 70 | 97 | 63 | 7.1 | 2.6 | 9.9 | 10 | 5 |
| July | 92 | 72 | 97 | 68 | 9.6 | 5.0 | 12.6 | 13 | 7 |
| August | 93 | 72 | 98 | 68 | 7.1 | 3.7 | 12.9 | 12 | 5 |
| September | 90 | 70 | 95 | 63 | 6.9 | 2.4 | 11.2 | 10 | 4 |
| October | 84 | 62 | 92 | 45 | 3.3 | .6 | 7.9 | 5 | 2 |
| November | 77 | 54 | 87 | 37 | 1.9 | .3 | 4.0 | 4 | 1 |
| December | 71 | 48 | 82 | 29 | 2.5 | .2 | 6.8 | 4 | 1 |
| Year | 83 | 60 | -- | -- | 55.6 | 42.0 | 66.4 | 85 | 38 |

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[5] JACK E. MICKELSON, former climatologist for Florida, National Weather Service, U.S. Department of Commerce, supplied the data for this section in 1967.

Frost or freezing temperatures in the colder parts of the survey area occur at least once every winter and average eight to ten times a year. Temperatures drop to 28° three or four times during an average winter and 25° or lower during about half the winters. Temperatures as low as 20° are rare. Winter cold spells are usually short, seldom more than 2 to 3 days. Table 20 shows the probability of the last freezing temperatures in spring and the first in fall.

Most summer rainfall occurs as local thundershowers in the afternoon or early evening. During June, July, August, and September, measurable rainfall can be expected on about half the days. Summer showers are sometimes heavy; 2 to 3 inches of rain can fall in 1 hour or 2 hours. Daylong rains in summer are rare and are almost always associated with a tropical storm. Winter and spring rains are usually associated with large-scale continental weather developments and are of longer duration. Some last for 24 hours or longer. They are usually not so intense as the summer thundershowers. Occasionally they release a large amount of rainfall over large areas. A 24-hour rainfall of 7 inches or more can be expected in about 1 year in 10.

Hail occurs at irregular intervals during thundershowers. Individual pieces are generally small and seldom cause much damage. Snow is rare. If snow occurs, it melts when it hits the ground.

Tropical storms can occur during the period early in June through mid-November. These storms diminish in intensity rapidly as they move inland. Winds reach hurricane force, that is, 74 miles per hour or greater, only in about 1 year in 100. Copious rains associated with these storms, however, can considerably damage crops and fields.

Extended dry periods or droughts can occur in any season, but are most common in spring and fall. A drought occurs when the soil does not have enough available water for plants to maintain normal growth. Within a normal year there are periods when rainfall does not supply as much water as is needed by most crops. Supplementary irrigation is needed in most years for maximum crop production. A drought or dry period in April and May, although generally of shorter duration than those in the fall, tends to be intensified by higher temperatures.

Prevailing winds are generally southerly in spring and summer and northerly in fall and winter. Windspeed usually ranges from 8 to 10 miles per hour during the day, but nearly always drops below 8 miles per hour at night.

## Physiography and Drainage

There are four main physiographic areas within the Marion County Area. The first of these is the narrow swamps along the Oklawaha and Withlacoochee Rivers. Very poorly drained organic and mineral soils are in these swamps. The natural vegetation is generally swamp hardwood or grass. In a few places it is mixed hardwood and pine.

The second physiographic area is the broad flatwoods in the eastern and southwestern parts of the survey area. The soils are generally poorly drained and are interspersed with small ponded areas. The vegetation is mostly pine, palmetto, and native grasses.

The third physiographic area is the rolling sand ridges that dominate the southern part. In this area are dominantly deep, excessively drained, nearly level to sloping sandy soils that are interspersed with small ponds and lakes having sandy bottoms. The natural vegetation is turkey oak, bluejack oak, post oak, scrub live oak, and longleaf pine and an understory of pineland three-awn.

The fourth physiographic area is the rolling up-

TABLE 20.—PROBABILITIES OF LAST FREEZING TEMPERATURES IN SPRING AND FIRST IN FALL

[All data from Ocala, Marion County. Elevation 65 feet]

| Probability | Dates for given probability and temperature | | | | |
|---|---|---|---|---|---|
| | 24°F or lower | 28°F or lower | 32°F or lower | 36°F or lower | 40°F or lower |
| Spring: | | | | | |
| 1 year in 10 later than | January 31 | February 26 | March 10 | March 31 | April 11 |
| 2 years in 10 later than | January 16 | February 13 | March 7 | March 22 | March 31 |
| 5 years in 10 later than | (1) | January 18 | February 13 | February 28 | March 19 |
| Fall: | | | | | |
| 1 year in 10 earlier than | December 13 | November 28 | November 15 | November 4 | October 27 |
| 2 years in 10 earlier than | (2) | December 1 | November 23 | November 8 | October 31 |
| 5 years in 10 earlier than | (1) | (1) | December 13 | November 29 | November 6 |

[1] A temperature this low occurs in fewer than 5 years in 10.
[2] A temperature this low occurs in fewer than 2 years in 10.

lands in the central and northwestern parts. In this area are poorly drained and well drained loamy and clayey soils. The vegetation is mixed pine and hardwoods.

Most of the area between the Oklawaha River along the eastern boundary and the Withlacoochee River along the southwestern boundary is drained internally and has no interconnecting surface drainage system. The internal drainage is normally through sinks, closed depressions, small ponds, lakes, or grassy prairies.

## Water

The Oklawaha River along the eastern boundary, the Withlacoochee River along the southwestern boundary, Orange Creek along the northwestern boundary, Silver Run just east of Ocala, and Rainbow River at Dunnellon are the only permanent streams and surface drainage systems within or adjoining the survey area.

Within the Marion County Area are two of the largest freshwater springs in the world. The largest of these, just east of Ocala at Silver Springs, discharges an average of 531 million gallons of water per day. The water flows down Silver Run for about 4 miles into the Oklawaha River. Rainbow Springs near Dunnellon discharges an average of about 468 million gallons per day. The water flows down Rainbow River about 4 miles into the Withlacoochee River. The source of water for these springs is the Floridian Aquifer, which is a layered sequence of porous limestone and dolomite ranging in age from middle Eocene to middle Miocene. The Floridian Aquifer, a large ground water storage area, provides an excellent potential for future water needs.

A number of lakes and small ponds are within the survey area. Although some lakes occur throughout the survey area, most are in the southeastern and northeastern parts. The largest is Lake Weir, which is 5,450 acres.

The water for towns, communities, and individual homes is supplied by wells. For a good supply of water, the wells are dug into the underlying limestone to the aquifer. The wells are then cased to the limestone. Depth of the wells varies, but averages 80 to 100 feet.

## Farming

Farming has always been a very important part of the economy of the Marion County Area. It is a diversified industry, mainly because of the variety of soils suitable for farming. Although the land-use patterns are changing, farmers have been able to increase yields from a decreasing amount of available farmland.

Vegetables, citrus, small grain, grass, fruit, and ornamentals are grown in addition to the general farm crops, corn and peanuts. The area is the largest producer of green peanuts in the State. Also, peanuts that are harvested when dry are grown on a large acreage. Watermelons are grown in many parts of the area each year. Tomatoes are also grown on a large acreage. Other vegetables are squash, eggplant, okra, cantaloupe, snap beans, and cucumbers.

Citrus has always been important in the economic growth of the area. Orange trees were probably first cultivated about 1830. Presently, the annual yield of oranges is about 3,350,000 boxes.

Beef is a major enterprise. About 125,000 acres of permanent pasture is used for beef cattle. Approximately 65,000 head of beef cattle is annually produced on these acres and in feedlots within the area. Dairying is also an important part of the farming economy.

The thoroughbred horse industry has become a most important segment of the farming industry. About 140 thoroughbred farms are within the area. The area has become the breeding and training center of the thoroughbred industry in Florida. These thoroughbred farms greatly affect the economy of the area.

## Transportation

The Marion County Area has a good transportation system. The area is served by four U.S. highways. These highways extend in a general north-south direction. U.S. Highways 301 and 441 converge about 9 miles north of Ocala and connect with U.S. Highway 27 in Ocala. U.S. Highway 41 is in the western part of the area. Interstate Highway 75 crosses the area in a north-south direction. There is also a good system of State roads. Most of these, including State Roads 40, 200, and 484, extend in a general east-west direction and connect with other major routes. State Roads 315 and 475 connect with these routes and extend in a north-south direction.

Several trucking firms that have facilities for handling interstate freight serve the area. Also, rail service is provided. Two airports, one at Silver Springs and one just west of Ocala, are in the survey area. They are mostly used by private owners for pleasure, charter service, and freight service.

## Industry and Manufacturing

Industry and manufacturing are important to the economy of the area because they furnish employment and in many instances a readily available source of needed supplies.

Approximately 135 manufacturing establishments are within the area. There are six industrial parks where a number of small industries manufacture mobile homes, fabricated metal products, precision instruments, apparel, and numerous other products. A number of additional small industrial parks are being built or are planned to meet the expected increased industrial development of the area.

The citrus industry is important to the area. The citrus processing plant in Ocala and the many citrus packing houses throughout the area employ a large number of people, mostly on a seasonal basis. Citrus pulp from the citrus processing plant is a good source of feed for cattle.

Hydrated lime and quicklime are produced and are used for such purposes as reducing acidity in citrus pulp and treating water. Limestone, which has diversified farming in the State and has been used in road building, is also produced within the area to some extent. Dolomite is mined on a limited basis. Some fertilizer is manufactured, and a limited amount of sand and fuller's earth is mined.

Two large meat packing plants are within the survey area. There are also a number of small establishments that prepare and preserve meat products on a small scale, generally as a family service. Commercial freezer plants are also available for the producer and consumer. A large livestock market is at Ocala, where a large number of livestock is sold throughout the year. Many of the major farm equipment and machinery companies sell and service their products around Ocala.

### Schools and Medical Facilities

The Marion County Area has a number of public elementary and middle schools. Five public high schools are within the area. There are eight private and parochial schools. A fully accredited 2-year community college is in Ocala.

Three hospitals that can each accommodate about 360 bed patients are in Ocala.

### Recreation

A variety of recreational activities are available within the area. Fishing, hunting, swimming, boating, water skiing, and horseback riding are popular.

The city of Ocala has a well rounded recreation program conducted by a full-time director and staff. There are a large number of parks and playgrounds that have up-to-date facilities. The city also has a visitor's center for senior citizens and a planned recreation program for this group.

The Ocala National Forest, which is adjacent to the Marion County Area and covers much of the eastern part of Marion County, furnishes numerous recreational activities, including hiking, boating, camping, swimming, hunting, fishing, and trail riding.

### Trends in Soil Use

The Marion County Area has steadily increased in population for many years. It has grown from about 29,000 in 1930 to about 69,000 in 1970. This growth has been greatly influenced by the climate, the valuable water supply, the central location within the State, and the good transportation system.

Although the soils have been used mainly for farming and forestry since early development, the acreage used for farming and forestry has steadily decreased for a number of years. The land area used for farming decreased by about 8 percent between 1964 and 1969 and has steadily decreased since 1969.

Small industries are likely to continue to move into the area. Retirees are moving into the area at an increased rate. If these trends continue, the population will grow at an increased rate. More areas now used for farming and forestry will be under urban development.

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## *Glossary*

**Aeration, soil.** The exchange of air in soil with air from the atmosphere. The air in a well aerated soil is similar to that in the atmosphere; the air in a poorly aerated soil is considerably higher in carbon dioxide and lower in oxygen.

**Aggregate, soil.** Many fine particles held in a single mass or cluster. Natural soil aggregates, such as granules, blocks, or prisms, are called peds. Clods are aggregates produced by tillage or logging.

**Area reclaim.** An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

**Argillic horizon.** A subsurface horizon into which clay has moved. It is about 20 percent more clay than horizons above. Clay films on ped faces and in soil pores are evidence of clay movement.

**Association, soil.** A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

**Available water capacity** (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as—

| | Inches |
|---|---|
| Very low | 0 to 3 |
| Low | 3 to 6 |
| Moderate | 6 to 9 |
| High | More than 9 |

**Clay.** As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

**Clay film.** A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

**Coarse fragments.** Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

**Coarse textured** (light textured) soil. Sand or loamy sand.

**Complex, soil.** A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

**Compressible.** Excessive decrease in volume of soft soil under load.

**Concretions.** Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

**Consistence, soil.** The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are—

*Loose.*—Noncoherent when dry or moist; does not hold together in a mass.

*Friable.*—When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

*Firm.*—When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

*Plastic.*—When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

*Sticky.*—When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

*Hard.*—When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

*Soft.*—When dry, breaks into powder or individual grains under very slight pressure.

*Cemented.*—Hard; little affected by moistening.

**Contour stripcropping** (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

**Corrosive.** High risk of corrosion to uncoated steel or deterioration of concrete.

**Cover crop.** A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

**Cutbanks cave.** Unstable walls of cuts made by earthmoving equipment. The soil sloughs easily.

**Cyclic coil.** A soil having horizons or layers near the surface at one point and deep below the surface at a point nearby. The entire range in depth, or cycle, repeats regularly at intervals of approximately 21 feet (7 meters).

**Depth to rock.** Bedrock at a depth that adversely affects the specified use.

**Drainage class** (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

*Excessively drained.*— Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocky, or shallow. Some are steep. All are free of the mottling related to wetness.

*Somewhat excessively drained.*—Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

*Well drained.*—Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

*Moderately well drained.*—Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

*Somewhat poorly drained.*—Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

*Poorly drained.*—Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

*Very poorly drained.*—Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artificially drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

**Drainage, surface.** Runoff, or surface flow of water, from an area.

**Erosion.** The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Erosion (geologic). Erosion caused by geologic processes acting over long geologic periods and resulting in the wearing away of mountains and the building up of such landscape features as flood plains and coastal plains. Synonym: natural erosion.

Erosion (accelerated). Erosion much more rapid than geologic erosion, mainly as a result of the activities of man or other animals or of a catastrophe in nature, for example, fire, that exposes a bare surface.

**Excess fines.** Excess silt and clay. The soil does not provide a source of gravel or sand for construction purposes.

**Excess humus.** Excess organic matter. Excess humus adversely affects engineering uses of the soil.

**Fast intake.** The rapid movement of water into the soil.

**Favorable.** Favorable soil features for the specified use.

**Fine textured** (heavy textured) soil. Sandy clay, silty clay, and clay.

**Flood plain.** A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

**Gleyed soil.** A soil having one or more neutral gray horizons as a result of waterlogging and lack of oxygen. The term "gleyed" also designates gray horizons and horizons having yellow and gray mottles as a result of intermittent waterlogging.

**Gravelly soil material.** Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

**Habitat.** The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

**Hemic soil material** (mucky peat). Organic soil material intermediate in degree of decomposition between the less decomposed fibric and the more decomposed sapric material.

**Horizon, soil.** A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

*O horizon.*—An organic layer, fresh and decaying plant residue, at the surface of a mineral soil.

*A horizon.*—The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

*A2 horizon.*—A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

*B horizon.*—The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characteristics caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

*C horizon.*—The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

*R layer.*—Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

**Hydrophyte.** A plant that grows under wet conditions or requires a large amount of moisture.

**Irrigation.** Application of water to soils to assist in production of crops. Methods of irrigation are—

*Border.*—Water is applied at the upper end of a strip in which the lateral flow of water is controlled by small earth ridges called border dikes, or borders.

*Basin.*—Water is applied rapidly to nearly level plains surrounded by levees or dikes.

*Controlled flooding.*—Water is released at intervals from closely spaced field ditches and distributed uniformly over the field.

*Corrugation.*—Water is applied to small, closely spaced furrows or ditches in fields of close-growing crops or in orchards so that it flows in only one direction.

*Furrow.*—Water is applied in small ditches made by cultivation implements. Furrows are used for tree and row crops.

*Sprinkler.*—Water is sprayed over the soil surface through pipes or nozzles from a pressure system.

*Subirrigtaion.*—Water is applied in open ditches or tile lines until the water table is raised enough to wet the soil.

*Wild flooding.*Water, released at high points, is allowed to flow onto an area without controlled distribution.

**Leaching.** The removal of soluble material from soil or other material by percolating water.

**Liquid limit.** The moisture content at which the soil passes from a plastic to a liquid state.

**Loam.** Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

**Low strength.** Inadequate strength for supporting loads.

**Medium textured soil.** Very fine sandy loam, loam, silt loam, or silt.

**Mineral soil.** Soil that is mainly mineral material and low in organic material. Its bulk density is greater than that of organic soil.

**Mottling, soil.** Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows: abundance—few, common, and many; size—fine, prominent. The size measurements are of the diameter along the greatest dimension. Fine indicates less than 5 millimeters (about 0.2 inch); medium, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and coarse, more than 15 millimeters (about 0.6 inch).

**Muck.** Dark colored, finely divided, well decomposed organic soil material mixed with mineral soil material. The content of organic matter is more than 20 percent.

**Nutrient, plant.** Any element taken in by a plant, essential to its growth, and used by it in the production of food and tissue. Plant nutrients are nitrogen, phosphorus, potassium, calcium, magnesium, sulfur, iron, manganese, copper, boron, zinc, and perhaps other elements obtained from the soil; and carbon, hydrogen, and oxygen obtained largely from the air and water.

**Organic matter.** A general term for plant and animal material, in or on the soil, in all stages of decomposition. Readily decomposed organic matter is often distinguished from the more stable forms that are past the stage of rapid decomposition.

**Organic soil.** A general term applied to a soil or a soil horizon that consists primarily of organic matter, such as peat, muck, or mucky peat. In chemistry, organic refers to the compounds of carbon.

**Parent material.** The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

**Ped.** An individual natural soil aggregate, such as a granule, a prism, or a block.

**Pedon.** The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

**Percolation.** The downward movement of water through the soil.

**Percs slowly.** The slow movement of water through the soil adversely affecting the specified use.

**Permanent pasture.** Pasture that is on the soil for a long time, in contrast to rotation pasture, which is on the soil only a year or two because it is grown in rotation with other crops.

**Permeability.** The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are very slow (less than 0.06 inch), slow (0.06 to 0.20 inch), moderately slow (0.2 to 0.6 inch), moderate (0.6 to 2.0 inches), moderately rapid (2.0 to 6.0 inches), rapid (6.0 to 20 inches), and very rapid (more than 20 inches).

**pH value.** (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

**Piping.** Moving water forms subsurface tunnels or pipelike cavities in the soil.

**Plasticity index.** The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

**Plastic limit.** The moisture content at which a soil changes from a semisolid to a plastic state.

**Plinthite.** The sesquioxide-rich, humus-poor, highly weathered mixture of clay with quartz and other diluents that commonly appears as red mottles, usually in platy, polygonal, or reticulate patterns. Plinthite changes irreversibly to an ironstone hardpan or to irregular aggregates on exposure to repeated wetting and drying, especially if it is exposed also to heat from the sun. In a moist soil, plinthite can be cut with a spade, whereas ironstone cannot be cut but can be broken or shattered with a spade. Plinthite is one form of the material that has been called laterite.

**Profile, soil.** A vertical section of the soil extending through all its horizons and into the parent material.

**Puddled soil.** Soil that is dense, massive, and without regular structure because it has been artificially compacted when wet. Commonly, a puddled soil is a clayey soil that has been tilled when wet.

**Reaction, soil.** The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as—

| | pH | | pH |
|---|---|---|---|
| Extremely acid | Below 4.5 | Neutral | 6.6 to 7.3 |
| Very strongly acid | 4.5 to 5.0 | Mildly alkaline | 7.4 to 7.8 |
| Strongly acid | 5.1 to 5.5 | Moderately alkaline | 7.9 to 8.4 |
| Medium acid | 5.6 to 6.0 | Strongly alkaline | 8.5 to 9.0 |
| Slightly acid | 6.1 to 6.5 | Very strongly alkaline | 9.1 and higher |

**Relief.** The elevations or inequalities of a land surface, considered collectively.

**Root zone.** The part of the soil that can be penetrated by plant roots.

**Sand.** As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

**Sandy soil.** A broad term for a soil of the sand and loamy sand classes; soil material with more than 70 percent sand and less than 15 percent clay.

**Sapric soil material** (muck). The most highly decomposed of all organic soil material. Muck has the least amount of plant fiber, the highest bulk density, and the lowest water content at saturation of all organic soil material.

**Seepage.** The rapid movement of water through the soil. Seepage adversely affects the specified use.

**Shrink-swell.** The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

**Silt.** As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

**Slickensides.** Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

**Slow refill.** The slow filling of ponds, resulting from restricted permeability in the soil.

**Small stones.** Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

**Soil.** A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

**Soil separates.** Mineral particles less than 2 millimeters in equivalent diameter and ranging between specified size limits. The names and sizes of separates recognized in the United States are as follows: very coarse sand (2.0 millimeters to 1.0 millimeter); coarse sand (1.0 to 0.5 millimeter); medium sand (0.5 to 0.25 millimeter); fine sand (0.25 to 0.10 millimeter); very fine sand (0.10 to 0.05 millimeter) silt (0.005 to 0.002 millimeter); and clay (less than 0.002 millimeter).

**Soil survey.** A systematic examination, description, classification, and mapping of soils in an area. Soil surveys are classified according to intensity of field examination as exploratory, reconnaissance, or detailed.

**Solum.** The upper part of a soil profile, above the C horizon in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

**Structure, soil.** The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are—platy (laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are either single grained (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).

**Subsoil.** Technically, the B horizon; roughly, the part of the solum below plow depth.

**Subsurface layer.** Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

**Supplemental irrigation.** A general term sometimes used for irrigation during dry periods in regions where normal precipitation supplies most of the moisture for crops.

**Surface layer.** A term used in nontechnical soil descriptions for one or more layers above the subsoil; in this survey, the A1 or Ap horizon.

**Surface soil.** The soil ordinarily moved in tillage, or its equivalent in uncultivated soil, ranging in depth from 4 to 10 inches (10 to 25 centimeters). Frequently designated as the "plow layer," or the "Ap horizon."

**Texture, soil.** The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

**Thin layer.** Otherwise suitable soil material too thin for the specified use.

**Tile drain.** Concrete or pottery pipe placed at suitable spacings and depths in the soil to provide water outlets.

**Tilth, soil.** The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

**Umbric epipedon.** A dark colored surface horizon that is more than 1 percent organic matter, is generally more than 7 inches thick, and has less than 50 percent base saturation.

**Underlying material.** The part of the soil below the solum; normally the C horizon.

**Understory.** The part of a forest that is below the upper crown canopy. Contrasts with overstory.

**Unstable fill.** Risk of caving or sloughing in banks of fill material.

**Water table.** The upper limit of the soil or underlying rock material that is wholly saturated with water.

Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.

Water table, artesian. A water table under hydrostatic head, generally beneath an impermeable layer. When this layer is penetrated, the water level rises in an uncased borehole.

Water table, perched. A water table standing above an unsaturated zone. In places an upper, or perched, water table is separated from a lower one by a dry zone.

# GUIDE TO MAPPING UNITS

| Map symbol | Mapping unit | Page | Capability unit | | Woodland group |
|---|---|---|---|---|---|
| | | | Symbol | Page | Number |
| AdB | Adamsville sand, 0 to 5 percent slopes | 17 | IIIw-1 | 67 | 3w1 |
| Ae | Anclote sand | 17 | IIIw-4 | 68 | 2w3 |
| AN | Anclote-Tomoka association | 17 | Vw-1 | 74 | --- |
| ApB | Apopka sand, 0 to 5 percent slopes | 18 | IIIs-1 | 70 | 3s1 |
| ApC | Apopka sand, 5 to 12 percent slopes | 18 | IVs-2 | 73 | 3s1 |
| ArB | Arredondo sand, 0 to 5 percent slopes | 19 | IIIs-1 | 70 | 3s1 |
| ArC | Arredondo sand, 5 to 8 percent slopes | 20 | IVs-2 | 73 | 3s1 |
| AsB | Arredondo-Urban land complex, 0 to 5 percent slopes | 20 | ------- | -- | --- |
| AtB | Astatula sand, 0 to 5 percent slopes | 20 | VIs-1 | 74 | 5s1 |
| AtC | Astatula sand, 5 to 12 percent slopes | 21 | VIIs-1 | 76 | 5s1 |
| BcA | Blichton sand, 0 to 2 percent slopes | 22 | IIIw-5 | 68 | 2w1 |
| BcB | Blichton sand, 2 to 5 percent slopes | 22 | IIIw-7 | 69 | 2w1 |
| BdB | Blichton-Urban land complex, 0 to 5 percent slopes | 22 | ------- | -- | --- |
| Bf | Bluff sandy clay | 23 | Vw-1 | 74 | 2w3 |
| BoC | Boardman loamy sand, 5 to 8 percent slopes | 24 | IVw-5 | 73 | 2w1 |
| BoD | Boardman loamy sand, 8 to 12 percent slopes | 24 | VIw-1 | 74 | 2w1 |
| Bp | Borrow pits | 25 | VIIIs-1 | 76 | --- |
| CaB | Candler sand, 0 to 5 percent slopes | 26 | IVs-1 | 73 | 4s1 |
| CaC | Candler sand, 5 to 12 percent slopes | 26 | VIs-2 | 75 | 4s1 |
| CwA | Candler clay, overwash, 0 to 2 percent slopes | 26 | VIs-2 | 75 | 4s1 |
| Ea | Eaton loamy sand | 27 | IIIw-3 | 67 | 2w2 |
| EcB | Electra sand, 0 to 5 percent slopes | 28 | VIs-3 | 75 | 4s1 |
| Er | Eureka loamy fine sand | 29 | IIIw-6 | 68 | 2w2 |
| Es | Eureka loamy fine sand, ponded | 29 | VIIw-1 | 75 | 2w3 |
| FeB | Fellowship loamy sand, 2 to 5 percent slopes | 30 | IIIw-2 | 67 | 2w1 |
| FeC | Fellowship loamy sand, 5 to 8 percent slopes | 30 | IVw-5 | 73 | 2w1 |
| FgB | Fellowship gravelly loamy sand, gravelly subsoil variant, 2 to 5 percent slopes | 31 | IVw-4 | 72 | 2w1 |
| FgC | Fellowship gravelly loamy sand, gravelly subsoil variant, 5 to 8 percent slopes | 31 | VIw-1 | 74 | 2w1 |
| FmA | Flemington loamy sand, 0 to 2 percent slopes | 32 | IIIw-5 | 68 | 2w1 |
| FmB | Flemington loamy sand, 2 to 5 percent slopes | 33 | IIIw-2 | 67 | 2w1 |
| GaB | Gainesville loamy sand, 0 to 5 percent slopes | 34 | IIIs-1 | 70 | 3s1 |
| GaC | Gainesville loamy sand, 5 to 8 percent slopes | 34 | IVs-2 | 73 | 3s1 |
| HaB | Hague sand, 2 to 5 percent slopes | 35 | IIe-2 | 65 | 2o1 |
| HaC | Hague sand, 5 to 8 percent slopes | 35 | IIIe-1 | 66 | 2o1 |
| HgB | Hague-Urban land complex, 0 to 5 percent slopes | 35 | ------- | -- | --- |
| Ho | Holopaw sand | 36 | IVw-3 | 72 | 3w2 |
| JuB | Jumper fine sand, 0 to 5 percent slopes | 37 | IIw-1 | 65 | 3w1 |
| KaB | Kanapaha fine sand, 0 to 5 percent slopes | 38 | IIIw-7 | 69 | 3w1 |
| KeA | Kendrick loamy sand, 0 to 2 percent slopes | 40 | IIs-1 | 66 | 2o1 |
| KeB | Kendrick loamy sand, 2 to 5 percent slopes | 40 | IIe-2 | 65 | 2o1 |
| KeC | Kendrick loamy sand, 5 to 8 percent slopes | 40 | IIIe-1 | 66 | 2o1 |
| LoA | Lochloosa fine sand, 0 to 2 percent slopes | 41 | IIw-1 | 65 | 2o1 |
| LoB | Lochloosa fine sand, 2 to 5 percent slopes | 41 | IIw-1 | 65 | 2o1 |
| LoC | Lochloosa fine sand, 5 to 8 percent slopes | 42 | IIIe-3 | 66 | 2o1 |
| Ly | Lynne sand | 43 | IIIw-9 | 69 | 3w1 |
| Ma | Martel sandy clay loam | 43 | Vw-1 | 74 | 2w3 |
| McB | Micanopy fine sand, 2 to 5 percent slopes | 45 | IIw-2 | 65 | 2o1 |
| McC | Micanopy fine sand, 5 to 8 percent slopes | 45 | IIIe-2 | 66 | 2o1 |
| Ok | Okeechobee muck | 46 | IIIw-8 | 69 | --- |
| Pa | Paisley loamy fine sand | 47 | IIIw-6 | 68 | 1w1 |
| PB | Pamlico-Martel association | 48 | IIIw-8 | 69 | --- |
| PeB | Pedro-Arredondo complex, 0 to 5 percent slopes | 49 | IIIs-1 | 70 | 3s1 |
| Pm | Placid sand | 50 | IIIw-4 | 68 | 4w1 |
| Pn | Placid-Pompano-Pomona complex | 51 | IVw-2 | 72 | 4w1 |
| Po | Pomona sand | 52 | IVw-2 | 72 | 3w1 |
| Pp | Pompano sand | 52 | IVw-3 | 72 | 4w1 |
| Pr | Pompano sand, ponded | 53 | VIIw-2 | 75 | 4w1 |
| SpB | Sparr fine sand, 0 to 5 percent slopes | 54 | IIIs-3 | 71 | 3s1 |

## GUIDE TO MAPPING UNITS--Continued

| Map symbol | Mapping unit | Page | Capability unit | | Woodland group |
|---|---|---|---|---|---|
| | | | Symbol | Page | Number |
| SpC | Sparr fine sand, 5 to 8 percent slopes | 54 | IVs-3 | 74 | 3s1 |
| SuB | Sparr-Urban land complex, 0 to 5 percent slopes | 54 | ------- | -- | --- |
| TaB | Tavares sand, 0 to 5 percent slopes | 55 | IIIs-2 | 71 | 3s1 |
| Tc | Terra Ceia muck | 56 | IIIw-8 | 69 | --- |
| Te | Terra Ceia muck, acid variant | 56 | IIIw-8 | 69 | --- |
| To | Tomoka muck | 57 | IIIw-8 | 69 | --- |
| UaA | Udalfic Arents, 0 to 5 percent slopes | 58 | VIs-4 | 75 | --- |
| UaF | Udalfic Arents, 15 to 60 percent slopes | 59 | VIIIs-1 | 76 | --- |
| Ur | Urban land | 59 | ------- | -- | --- |
| WaC | Wacahoota loamy sand, 5 to 8 percent slopes | 59 | IVw-1 | 71 | 2w1 |
| WgB | Wacahoota gravelly sand, gravelly subsoil variant, 2 to 5 percent slopes | 61 | IVw-4 | 72 | 2w1 |
| WgC | Wacahoota gravelly sand, gravelly subsoil variant, 5 to 8 percent slopes | 61 | VIw-1 | 74 | 2w1 |
| ZuA | Zuber loamy sand, 0 to 2 percent slopes | 62 | I-1 | 64 | 2o1 |
| ZuB | Zuber loamy sand, 2 to 5 percent slopes | 62 | IIe-1 | 64 | 2o1 |
| ZuC | Zuber loamy sand, 5 to 8 percent slopes | 62 | IIIe-2 | 66 | 2o1 |

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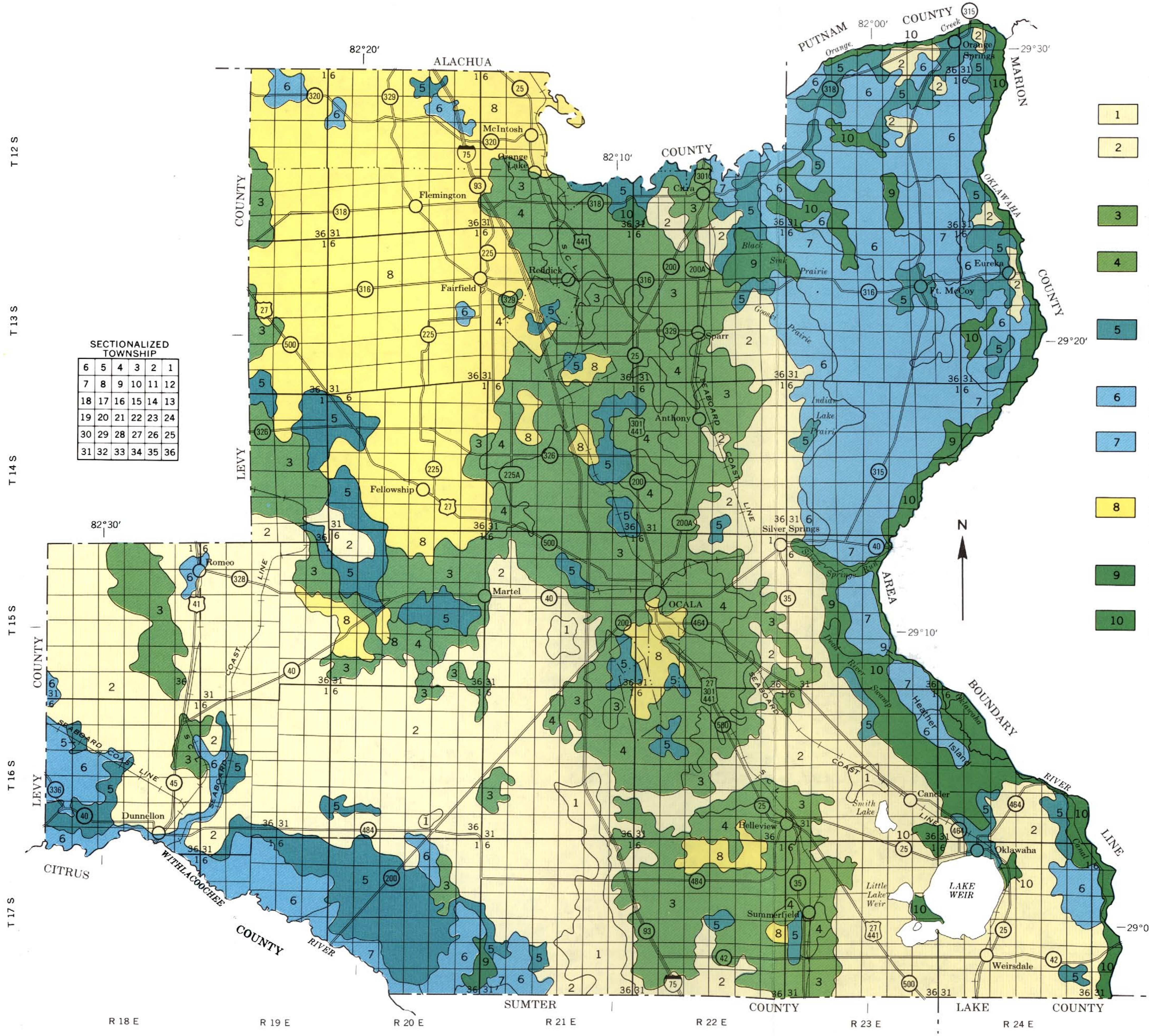
ALACHUA COUNTY
PUTNAM COUNTY
MARION COUNTY
OKLAWAHA AREA BOUNDARY LINE
LEVY COUNTY
CITRUS COUNTY
SUMTER COUNTY
LAKE COUNTY
WITHLACOOCHEE RIVER
82°20′
82°10′
82°00′
82°30′
29°30′
29°20′
29°10′
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SECTIONALIZED TOWNSHIP
6 5 4 3 2 1
7 8 9 10 11 12
18 17 16 15 14 13
19 20 21 22 23 24
30 29 28 27 26 25
31 32 33 34 35 36
N
McIntosh
Orange Lake
Flemington
Reddick
Fairfield
Citra
Orange Springs
Eureka
Ft. McCoy
Sparr
Anthony
Fellowship
Silver Springs
Martel
OCALA
Romeo
Dunnellon
Belleview
Candler
Oklawaha
Smith Lake
Little Lake Weir
LAKE WEIR
Summerfield
Weirsdale
Black Sink Prairie
Gordon Prairie
Indian Lake Prairie
Orange Creek
Silver Springs Run
Dead River Swamp
Heather Island
Oklawaha River
SEABOARD COAST LINE
S.C.L.

## SOIL ASSOCIATIONS

MAINLY EXCESSIVELY DRAINED, NEARLY LEVEL TO STRONGLY SLOPING SOILS OF THE UPLANDS.

1 **ASTATULA** association: Nearly level to strongly sloping, excessively drained soils, sandy to a depth of more than 80 inches

2 **CANDLER–APOPKA** association: Nearly level to strongly sloping, excessively drained and well drained sandy soils, some with thin sandy loam lamellae at a depth of 60 to 80 inches and others loamy at a depth of 40 to 80 inches

WELL DRAINED, NEARLY LEVEL TO SLOPING SOILS OF THE UPLANDS.

3 **ARREDONDO–GAINESVILLE** association: Nearly level to sloping, well drained soils, some sandy to a depth of more than 40 inches and loamy below and others sandy throughout

4 **KENDRICK–HAGUE–ZUBER** association: Nearly level to sloping, well drained soils, sandy to a depth of less than 40 inches and loamy or clayey below

SOMEWHAT POORLY DRAINED AND MODERATELY WELL DRAINED, NEARLY LEVEL TO SLOPING SOILS OF THE UPLANDS AND FLATWOODS.

5 **SPARR–LOCHLOOSA–TAVARES** association: Nearly level to sloping, somewhat poorly drained and moderately well drained soils, some sandy to a depth of 20 to more than 40 inches and loamy below and others sandy throughout

POORLY DRAINED, NEARLY LEVEL SOILS OF THE FLATWOODS.

6 **LYNNE–POMONA–POMPANO** association: Nearly level, poorly drained soils, some sandy to a depth of 22 to 80 inches, weakly cemented within a depth of 30 inches, and loamy and clayey in the lower layers and others sandy throughout

7 **EUREKA–PAISLEY–EATON** association: Nearly level, poorly drained soils, sandy to a depth of 5 to 40 inches and clayey below

POORLY DRAINED, NEARLY LEVEL TO STRONGLY SLOPING SOILS OF THE UPLANDS.

8 **BLICHTON–FLEMINGTON–KANAPAHA** association: Nearly level to strongly sloping, poorly drained soils, sandy to a depth of less than 20 to more than 40 inches and loamy or clayey below

VERY POORLY DRAINED SOILS OF THE FLATWOODS AND FLOOD PLAINS.

9 **BLUFF–MARTEL** association: Nearly level, very poorly drained soils, some loamy and clayey throughout and others loamy in the upper part and clayey within a depth of 20 inches

10 **OKEECHOBEE–TERRA CEIA–TOMOKA** association: Nearly level, very poorly drained organic soils, some organic to a depth of 52 inches and others organic in the upper 16 to 40 inches and sandy and loamy below

Compiled 1976

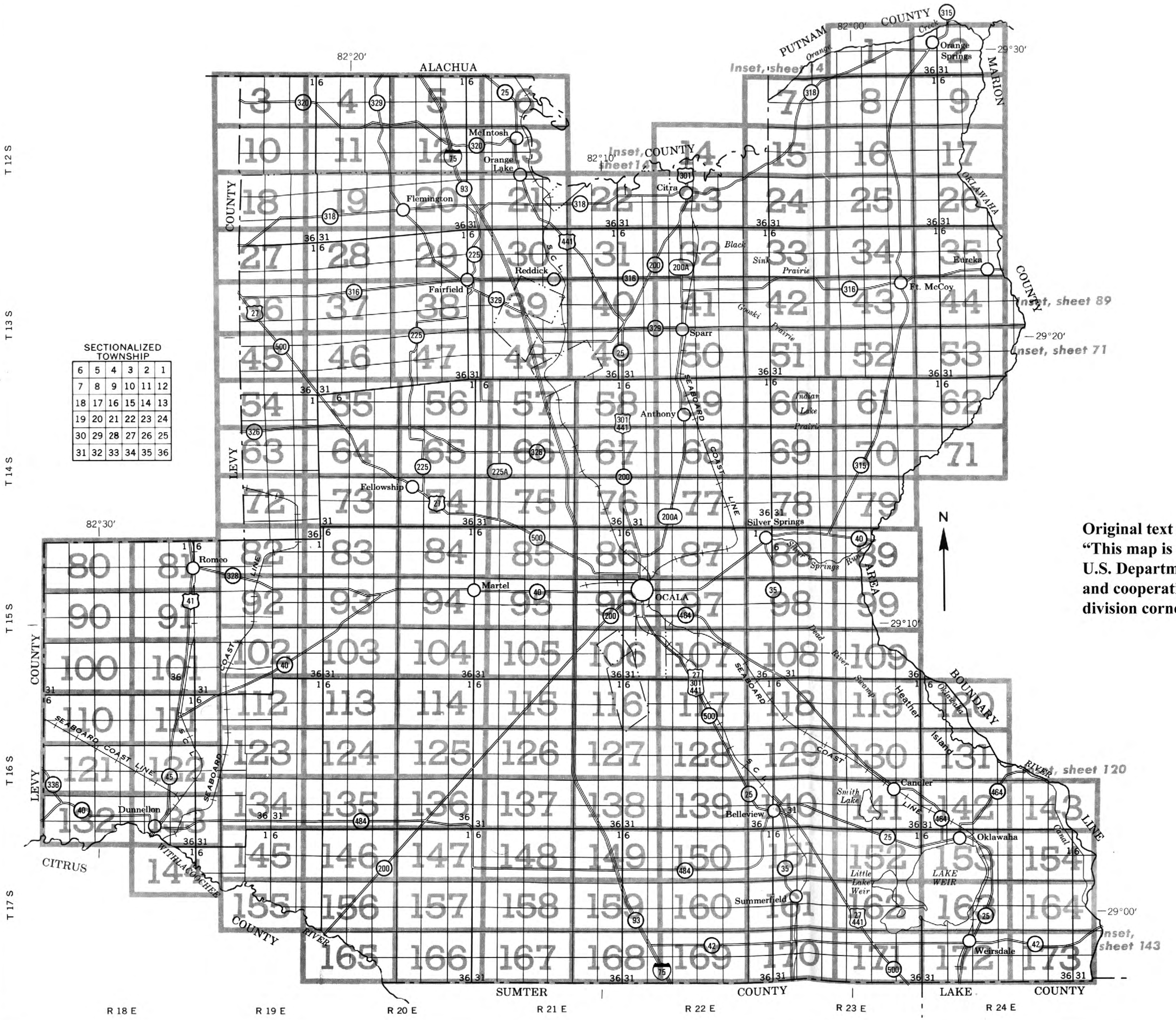
*Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.*

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
UNIVERSITY OF FLORIDA INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
AGRICULTURAL EXPERIMENT STATION SOIL SCIENCE DEPARTMENT

# GENERAL SOIL MAP
## MARION COUNTY AREA, FLORIDA

Scale 1:253,440

1 0 1 2 3 4 Miles


PUTNAM COUNTY
ALACHUA COUNTY
LEVY COUNTY
CITRUS COUNTY
SUMTER COUNTY
LAKE COUNTY
MARION COUNTY BOUNDARY LINE
Inset, sheet 14
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Inset, sheet 89
Inset, sheet 71
Inset, sheet 120
Inset, sheet 143
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Orange Springs
McIntosh
Orange Lake
Citra
Flemington
Reddick
Fairfield
Eureka
Ft. McCoy
Sparr
Anthony
Fellowship
Silver Springs
Romeo
Martel
OCALA
Dunnellon
Belleview
Candler
Oklawaha
Summerfield
Weirsdale
Black Sink Prairie
Gooski Prairie
Indian Lake Prairie
Silver Springs Run
Dead River Swamp
Heather Island
Smith Lake
Little Lake Weir
LAKE WEIR
WITHLACOOCHEE RIVER
OKLAWAHA RIVER
Orange Creek
SEABOARD COAST LINE
S C L

SECTIONALIZED TOWNSHIP

| | | | | | |
|---|---|---|---|---|---|
| 6 | 5 | 4 | 3 | 2 | 1 |
| 7 | 8 | 9 | 10 | 11 | 12 |
| 18 | 17 | 16 | 15 | 14 | 13 |
| 19 | 20 | 21 | 22 | 23 | 24 |
| 30 | 29 | 28 | 27 | 26 | 25 |
| 31 | 32 | 33 | 34 | 35 | 36 |

**Original text from each map sheet:**
**"This map is compiled on 1970 aerial photography by the U.S. Department of Agriculture, Soil Conservation Service and cooperating agencies. Coordinate grid ticks and land division corners, if shown, are approximately positioned."**

## INDEX TO MAP SHEETS
## MARION COUNTY AREA, FLORIDA

Scale 1:253,440
1 0 1 2 3 4 Miles

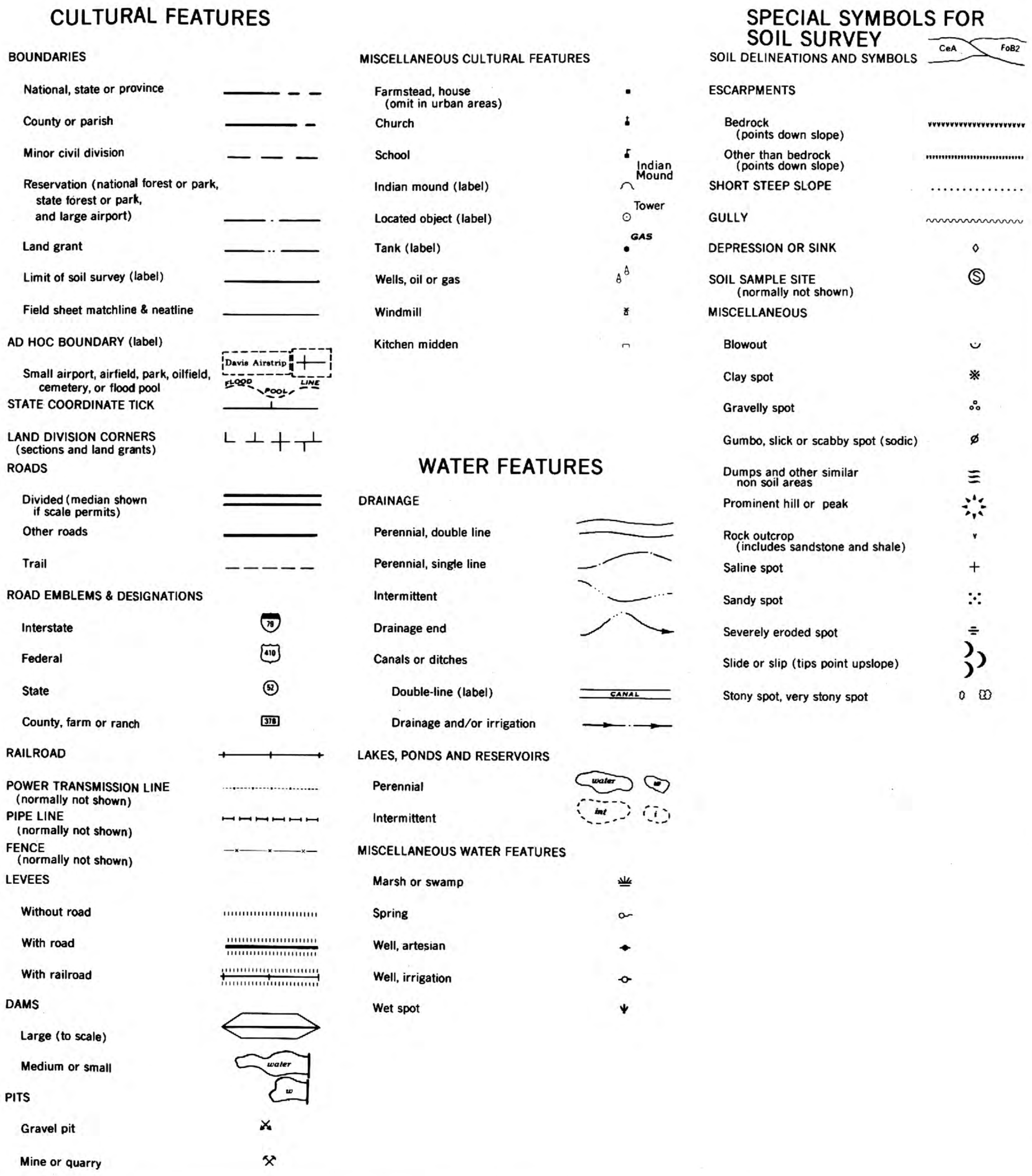
## SOIL LEGEND

The first letter, always a capital, is the initial letter of the soil name. The second letter is lower case for a detailed mapping unit, and a capital letter for broadly defined mapping units. 1/ The third letter, if used, is a capital letter and denotes slope class. Symbols without a slope letter are for nearly level soils.

1/ Broadly defined units indicate the delineations generally are larger and the composition of the unit is apt to be more variable than for other units in the survey area. Mapping has been controlled to conform with the anticipated uses of the soils.

| SYMBOL | NAME |
|---|---|
| AdB | Adamsville sand, 0 to 5 percent slopes |
| Ae | Anclote sand |
| AN | Anclote-Tomoka association |
| ApB | Apopka sand, 0 to 5 percent slopes |
| ApC | Apopka sand, 5 to 12 percent slopes |
| ArB | Arredondo sand, 0 to 5 percent slopes |
| ArC | Arredondo sand, 5 to 8 percent slopes |
| AsB | Arredondo-Urban land complex, 0 to 5 percent slopes |
| AtB | Astatula sand, 0 to 5 percent slopes |
| AtC | Astatula sand, 5 to 12 percent slopes |
| BcA | Blichton sand, 0 to 2 percent slopes |
| BcB | Blichton sand, 2 to 5 percent slopes |
| BdB | Blichton-Urban land complex, 0 to 5 percent slopes |
| Bf | Bluff sandy clay |
| BoC | Boardman loamy sand, 5 to 8 percent slopes |
| BoD | Boardman loamy sand, 8 to 12 percent slopes |
| Bp | Borrow pits |
| CaB | Candler sand, 0 to 5 percent slopes |
| CaC | Candler sand, 5 to 12 percent slopes |
| CwA | Candler clay, overwash, 0 to 2 percent slopes |
| Ea | Eaton loamy sand |
| EcB | Electra sand, 0 to 5 percent slopes |
| Er | Eureka loamy fine sand |
| Es | Eureka loamy fine sand, ponded |
| FeB | Fellowship loamy sand, 2 to 5 percent slopes |
| FeC | Fellowship loamy sand, 5 to 8 percent slopes |
| FgB | Fellowship gravelly loamy sand, gravelly subsoil variant, 2 to 5 percent slopes |
| FgC | Fellowship gravelly loamy sand, gravelly subsoil variant, 5 to 8 percent slopes |
| FmA | Flemington loamy sand, 0 to 2 percent slopes |
| FmB | Flemington loamy sand, 2 to 5 percent slopes |
| GaB | Gainesville loamy sand, 0 to 5 percent slopes |
| GaC | Gainesville loamy sand, 5 to 8 percent slopes |
| HaB | Hague sand, 2 to 5 percent slopes |
| HaC | Hague sand, 5 to 8 percent slopes |
| HgB | Hague-Urban land complex, 0 to 5 percent slopes |
| Ho | Holopaw sand |
| JuB | Jumper fine sand, 0 to 5 percent slopes |
| KaB | Kanapaha fine sand, 0 to 5 percent slopes |
| KeA | Kendrick loamy sand, 0 to 2 percent slopes |
| KeB | Kendrick loamy sand, 2 to 5 percent slopes |
| KeC | Kendrick loamy sand, 5 to 8 percent slopes |
| LoA | Lochloosa fine sand, 0 to 2 percent slopes |
| LoB | Lochloosa fine sand, 2 to 5 percent slopes |
| LoC | Lochloosa fine sand, 5 to 8 percent slopes |
| Ly | Lynne sand |
| Ma | Martel sandy clay loam |
| McB | Micanopy fine sand, 2 to 5 percent slopes |
| McC | Micanopy fine sand, 5 to 8 percent slopes |
| Ok | Okeechobee muck |
| Pa | Paisley loamy fine sand |
| PB | Pamlico-Martel association |
| PeB | Pedro-Arredondo complex, 0 to 5 percent slopes |
| Pm | Placid sand |
| Pn | Placid-Pompano-Pomona complex |
| Po | Pomona sand |
| Pp | Pompano sand |
| Pr | Pompano sand, ponded |
| SpB | Sparr fine sand, 0 to 5 percent slopes |
| SpC | Sparr fine sand, 5 to 8 percent slopes |
| SuB | Sparr-Urban land complex, 0 to 5 percent slopes |
| TaB | Tavares sand, 0 to 5 percent slopes |
| Tc | Terra Ceia muck |
| Te | Terra Ceia muck, acid variant |
| To | Tomoka muck |
| UaA | Udalfic Arents, 0 to 5 percent slopes |
| UaF | Udalfic Arents, 15 to 60 percent slopes |
| Ur | Urban land |
| WaC | Wacahoota loamy sand, 5 to 8 percent slopes |
| WgB | Wacahoota gravelly sand, gravelly subsoil variant, 2 to 5 percent slopes |
| WgC | Wacahoota gravelly sand, gravelly subsoil variant, 5 to 8 percent slopes |
| ZuA | Zuber loamy sand, 0 to 2 percent slopes |
| ZuB | Zuber loamy sand, 2 to 5 percent slopes |
| ZuC | Zuber loamy sand, 5 to 8 percent slopes |

# CONVENTIONAL AND SPECIAL SYMBOLS LEGEND



## CULTURAL FEATURES

BOUNDARIES

- National, state or province
- County or parish
- Minor civil division
- Reservation (national forest or park, state forest or park, and large airport)
- Land grant
- Limit of soil survey (label)
- Field sheet matchline & neatline

AD HOC BOUNDARY (label)

- Small airport, airfield, park, oilfield, cemetery, or flood pool

STATE COORDINATE TICK

LAND DIVISION CORNERS (sections and land grants)

ROADS

- Divided (median shown if scale permits)
- Other roads
- Trail

ROAD EMBLEMS & DESIGNATIONS

- Interstate
- Federal
- State
- County, farm or ranch

RAILROAD

POWER TRANSMISSION LINE (normally not shown)

PIPE LINE (normally not shown)

FENCE (normally not shown)

LEVEES

- Without road
- With road
- With railroad

DAMS

- Large (to scale)
- Medium or small

PITS

- Gravel pit
- Mine or quarry

MISCELLANEOUS CULTURAL FEATURES

- Farmstead, house (omit in urban areas)
- Church
- School
- Indian mound (label)
- Located object (label)
- Tank (label)
- Wells, oil or gas
- Windmill
- Kitchen midden

## WATER FEATURES

DRAINAGE

- Perennial, double line
- Perennial, single line
- Intermittent
- Drainage end
- Canals or ditches
  - Double-line (label)
  - Drainage and/or irrigation

LAKES, PONDS AND RESERVOIRS

- Perennial
- Intermittent

MISCELLANEOUS WATER FEATURES

- Marsh or swamp
- Spring
- Well, artesian
- Well, irrigation
- Wet spot

## SPECIAL SYMBOLS FOR SOIL SURVEY

SOIL DELINEATIONS AND SYMBOLS

ESCARPMENTS

- Bedrock (points down slope)
- Other than bedrock (points down slope)

SHORT STEEP SLOPE

GULLY

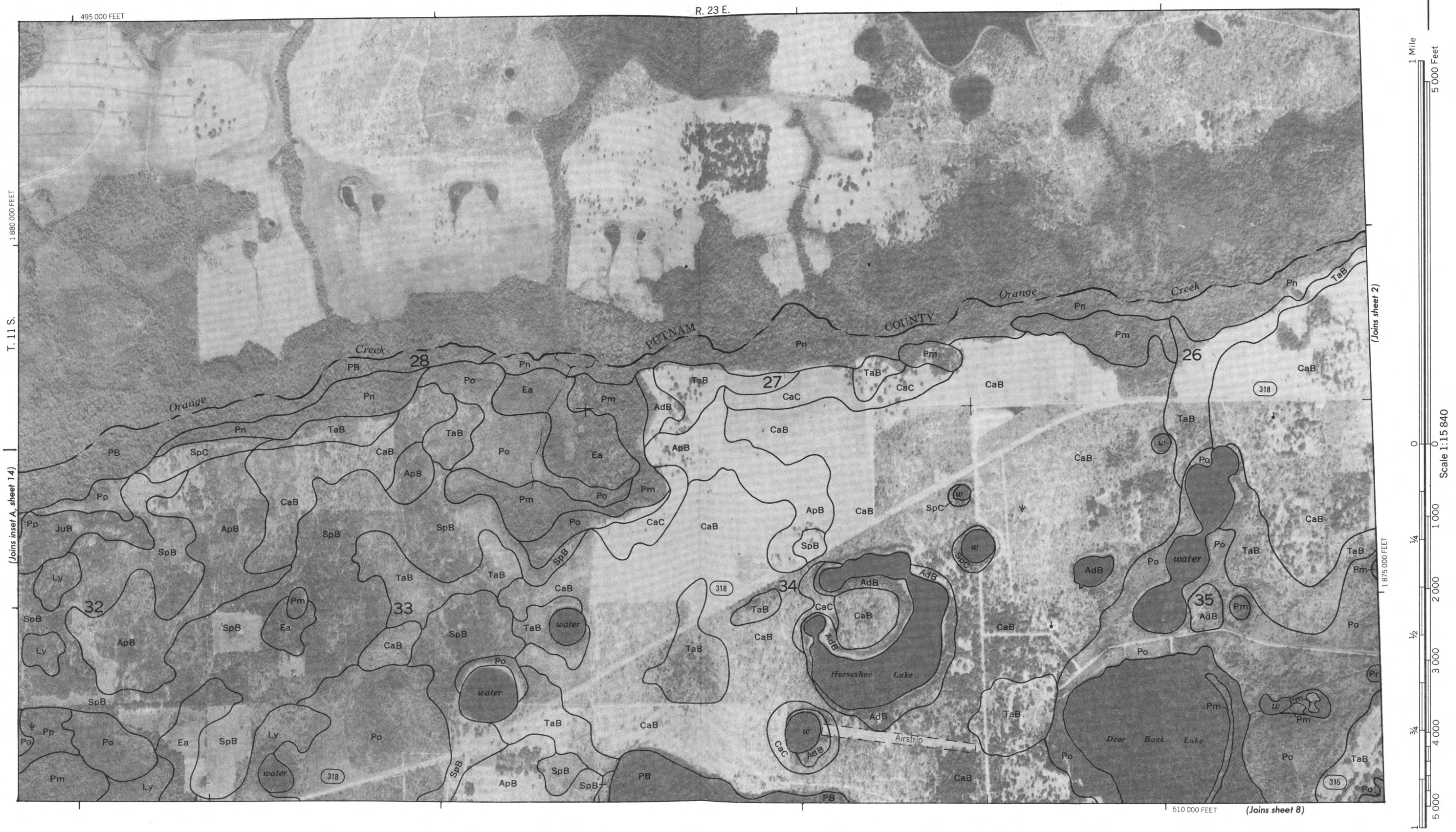
DEPRESSION OR SINK

SOIL SAMPLE SITE (normally not shown)

MISCELLANEOUS

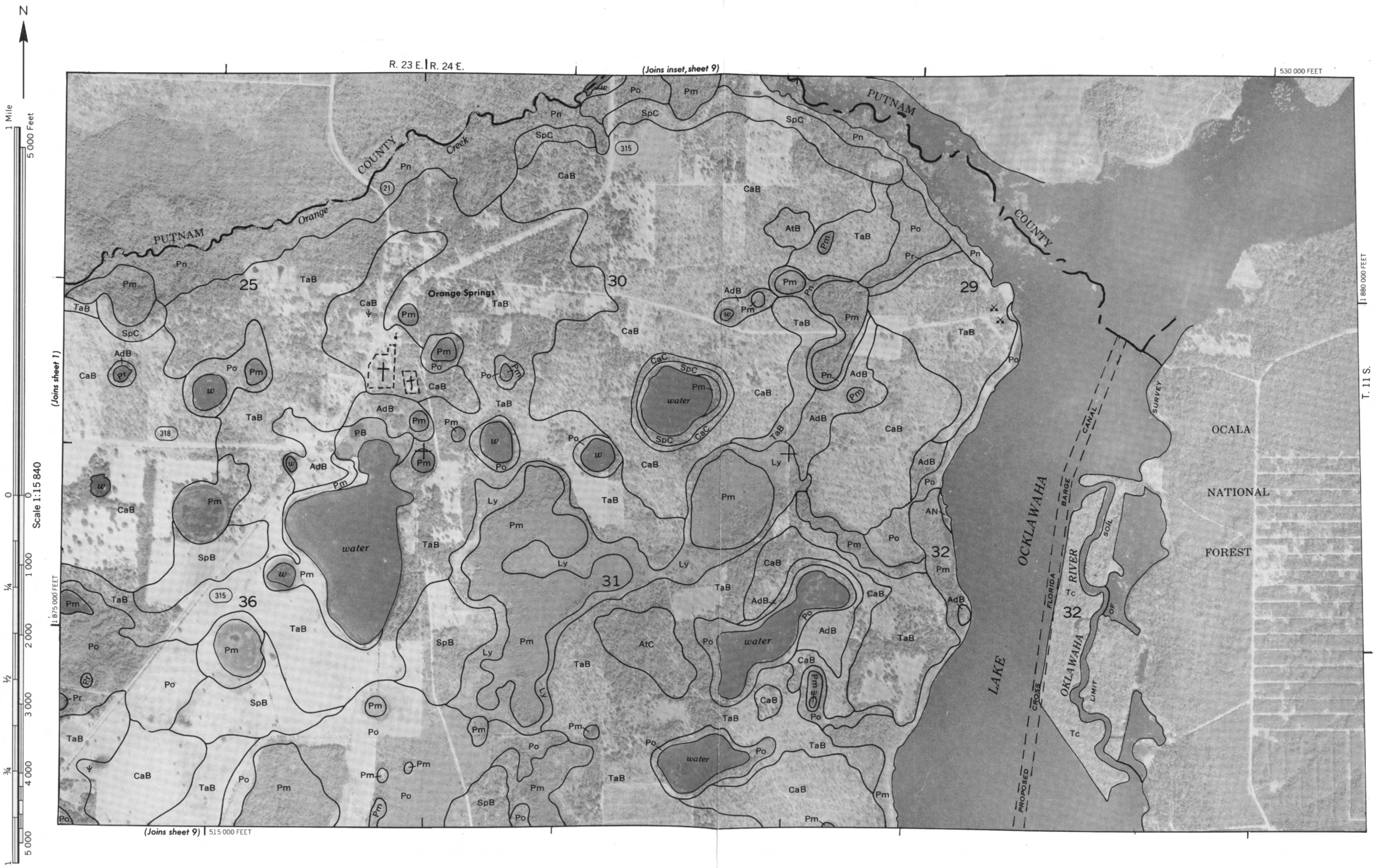
- Blowout
- Clay spot
- Gravelly spot
- Gumbo, slick or scabby spot (sodic)
- Dumps and other similar non soil areas
- Prominent hill or peak
- Rock outcrop (includes sandstone and shale)
- Saline spot
- Sandy spot
- Severely eroded spot
- Slide or slip (tips point upslope)
- Stony spot, very stony spot

# MARION COUNTY, FLORIDA — SHEET NUMBER 1



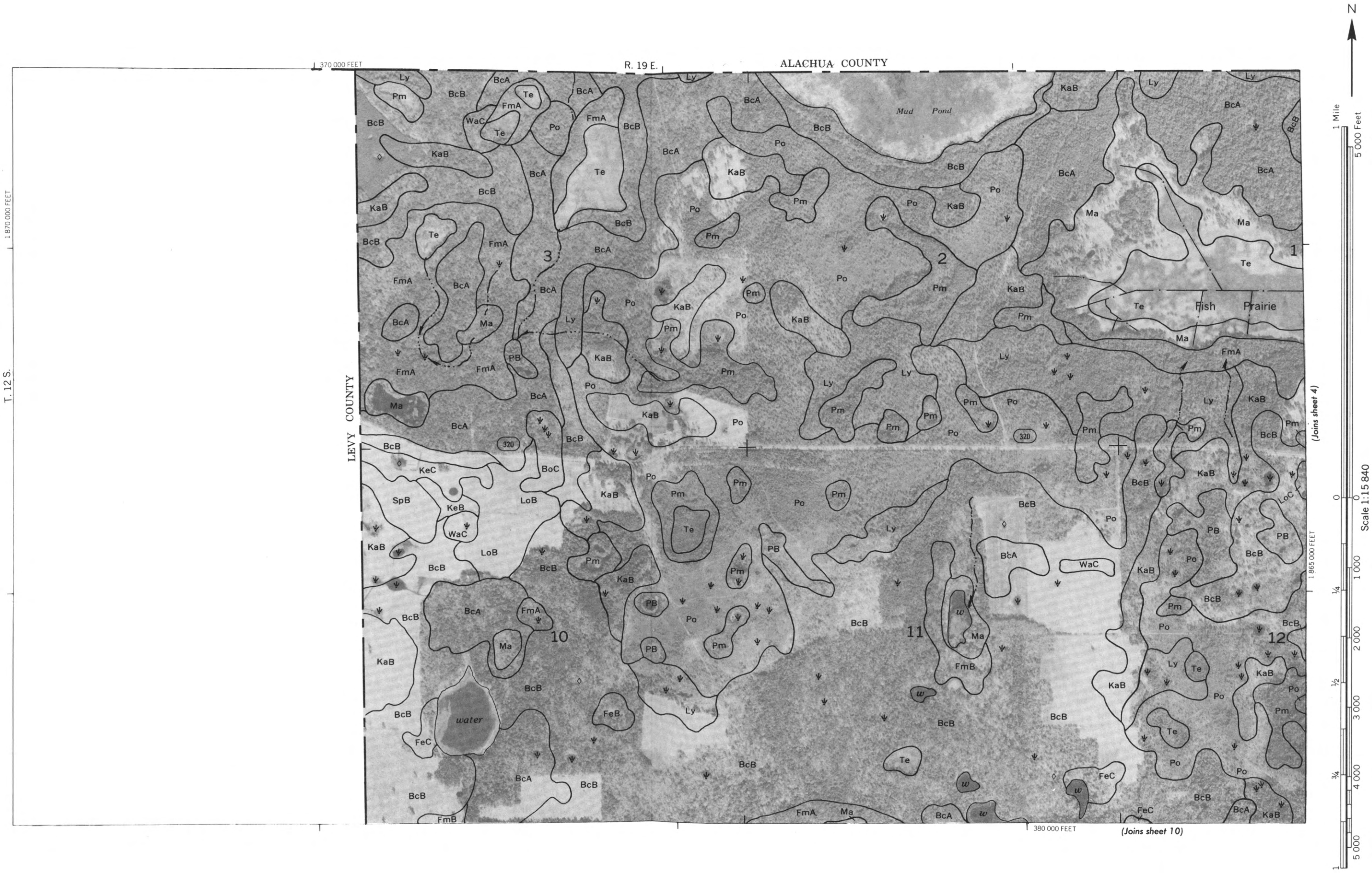
①
N
495 000 FEET
R. 23 E.
1 880 000 FEET
T. 11 S.
(Joins inset A, sheet 14)
(Joins sheet 2)
(Joins sheet 8)
1 875 000 FEET
510 000 FEET
Orange Creek
PUTNAM COUNTY
28
27
26
32
33
34
35
PB
Pn
Po
Ea
Pm
TaB
CaC
CaB
AdB
ApB
SpC
SpB
Pp
JuB
Ly
Pr
w
water
318
315
Horseshoe Lake
Deer Back Lake
Airstrip
Scale 1:15 840
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000

# MARION COUNTY, FLORIDA — SHEET NUMBER 2


N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1000
2000
3000
4000
5000
R. 23 E. | R. 24 E.
(Joins inset, sheet 9)
530 000 FEET
(Joins sheet 1)
(Joins sheet 9)
515 000 FEET
1 880 000 FEET
1 875 000 FEET
T. 11 S.
PUTNAM COUNTY
Orange Creek
PUTNAM
COUNTY
Orange Springs
25
30
29
36
31
32
32
315
21
318
315
water
water
water
water
water
LAKE OCKLAWAHA
PROPOSED CROSS FLORIDA BARGE CANAL
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
OCALA NATIONAL FOREST
Pn
SpC
Po
Pm
CaB
TaB
AdB
AtB
AtC
Pr
PB
Ly
SpB
CaC
AN
Tc
w

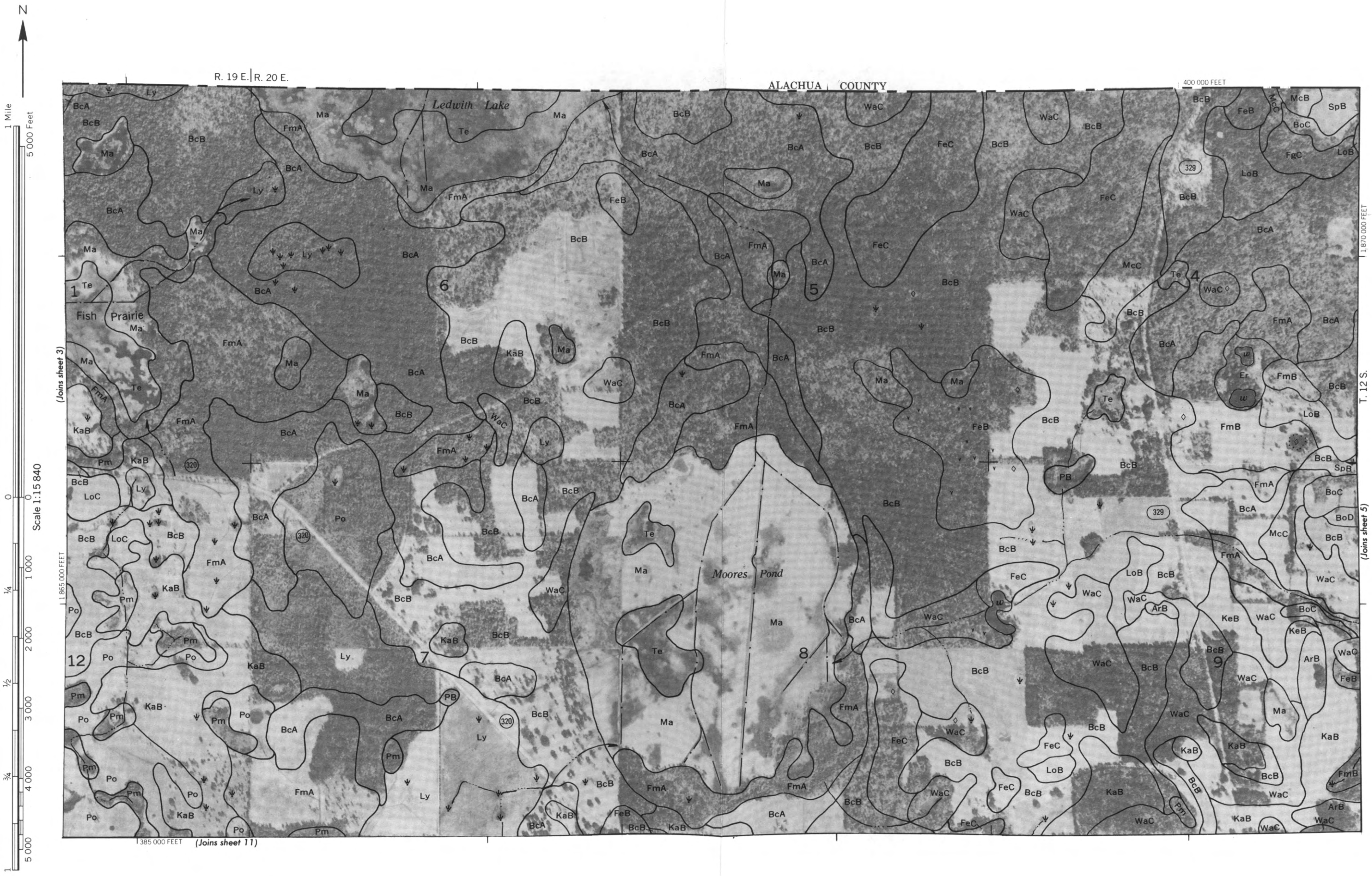
MARION COUNTY, FLORIDA — SHEET NUMBER 3

③

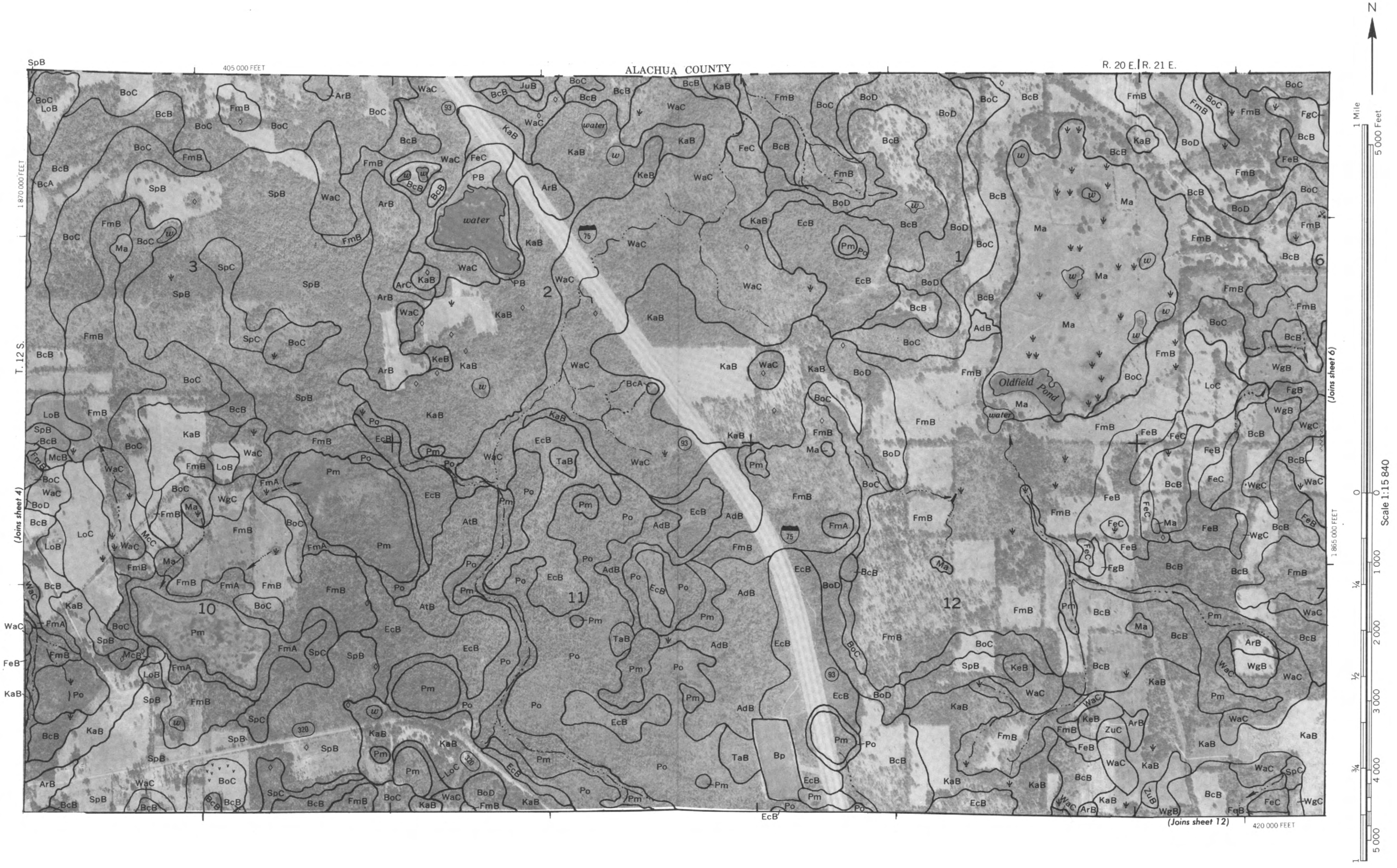

N
ALACHUA COUNTY
LEVY COUNTY
R. 19 E.
T. 12 S.
370 000 FEET
380 000 FEET
1 870 000 FEET
1 865 000 FEET
(Joins sheet 4)
(Joins sheet 10)
Mud Pond
Fish Prairie
water
320
1
2
3
10
11
12
BcA
BcB
BoC
FeB
FeC
FmA
FmB
KaB
KeB
KeC
LoB
LoC
Ly
Ma
PB
Pm
Po
SpB
Te
WaC
w
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

④

# MARION COUNTY, FLORIDA — SHEET NUMBER 4

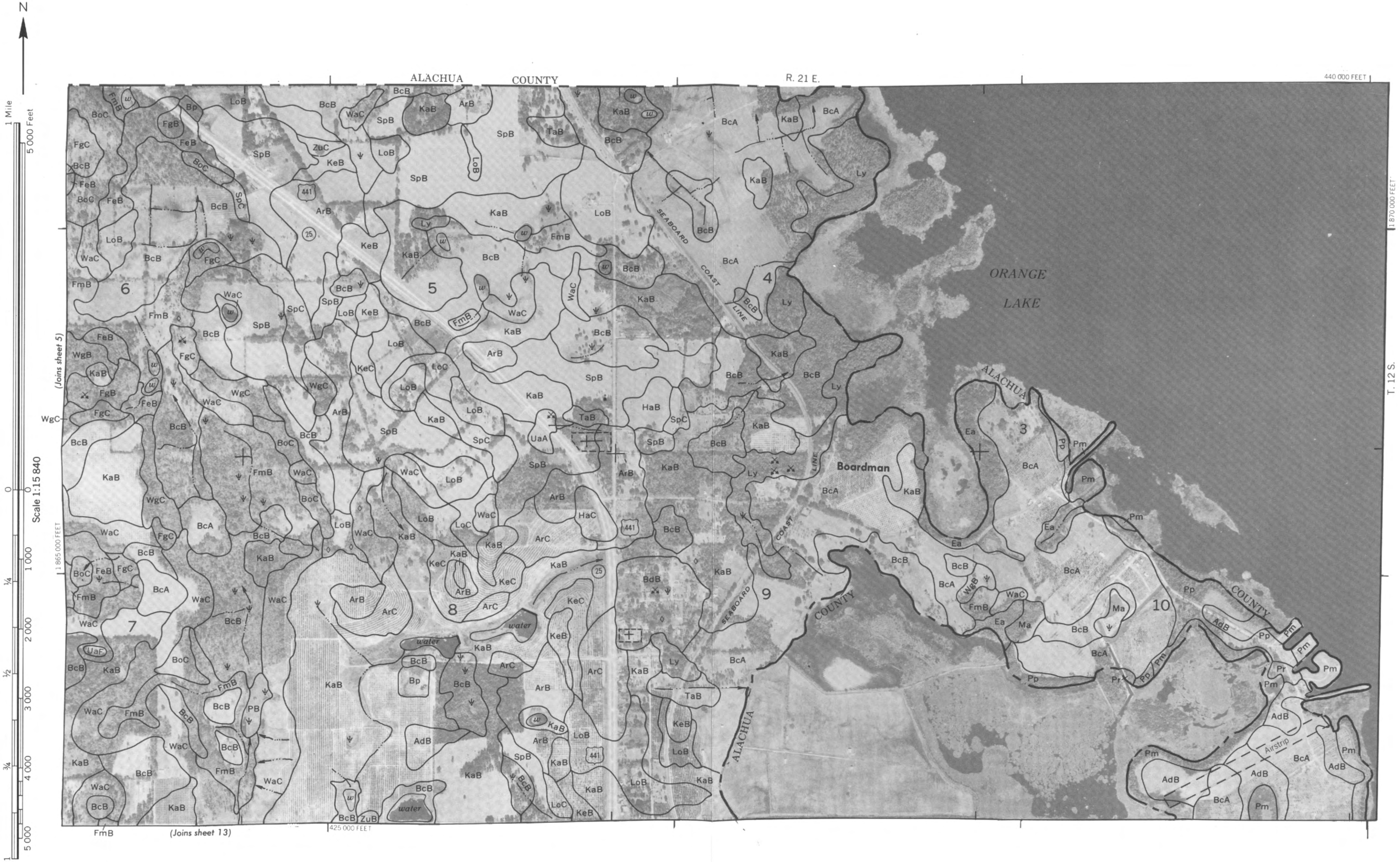

N
1 Mile
5 000 Feet
0
Scale 1:15 840
1 000
2 000
3 000
4 000
5 000
¼
½
¾
R. 19 E.
R. 20 E.
ALACHUA COUNTY
400 000 FEET
1 870 000 FEET
1 865 000 FEET
385 000 FEET
T. 12 S.
(Joins sheet 3)
(Joins sheet 5)
(Joins sheet 11)
Ledwith Lake
Moores Pond
Fish Prairie
1
4
5
6
7
8
9
12
320
329
BcA
BcB
Ma
Te
Ly
FmA
FmB
FeB
FeC
WaC
McB
McC
SpB
BoC
BoD
FgC
LoB
LoC
KaB
KeB
Pm
Po
PB
Er
ArB
Ly
w

MARION COUNTY, FLORIDA — SHEET NUMBER 5

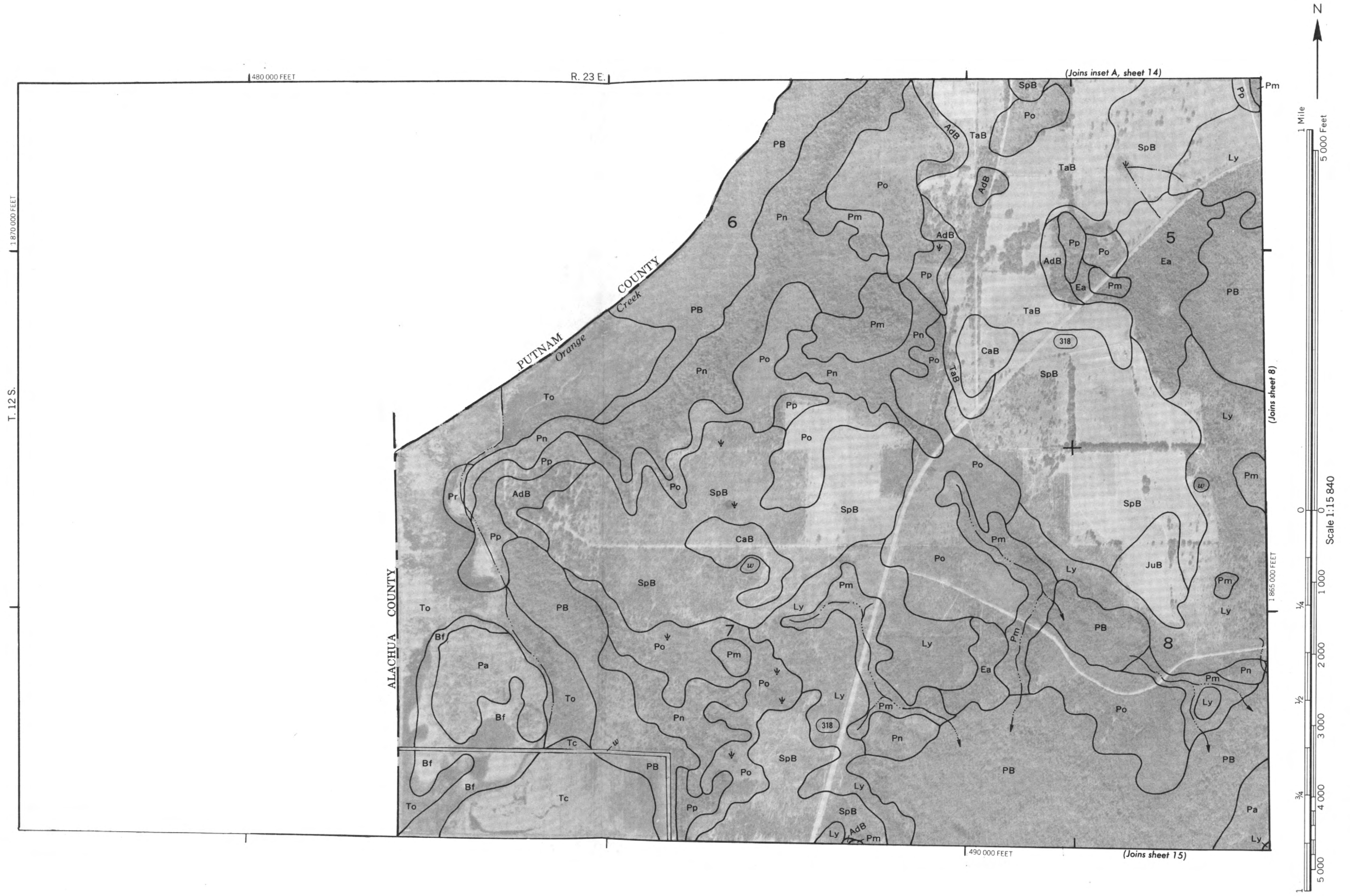

N
ALACHUA COUNTY
405 000 FEET
420 000 FEET
1 870 000 FEET
1 865 000 FEET
R. 20 E.
R. 21 E.
T. 12 S.
(Joins sheet 4)
(Joins sheet 6)
(Joins sheet 12)
Oldfield Pond
water
75
93
320
1
2
3
6
7
10
11
12
Scale 1:15 840
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1000
2000
3000
4000
5000

6

# MARION COUNTY, FLORIDA — SHEET NUMBER 6

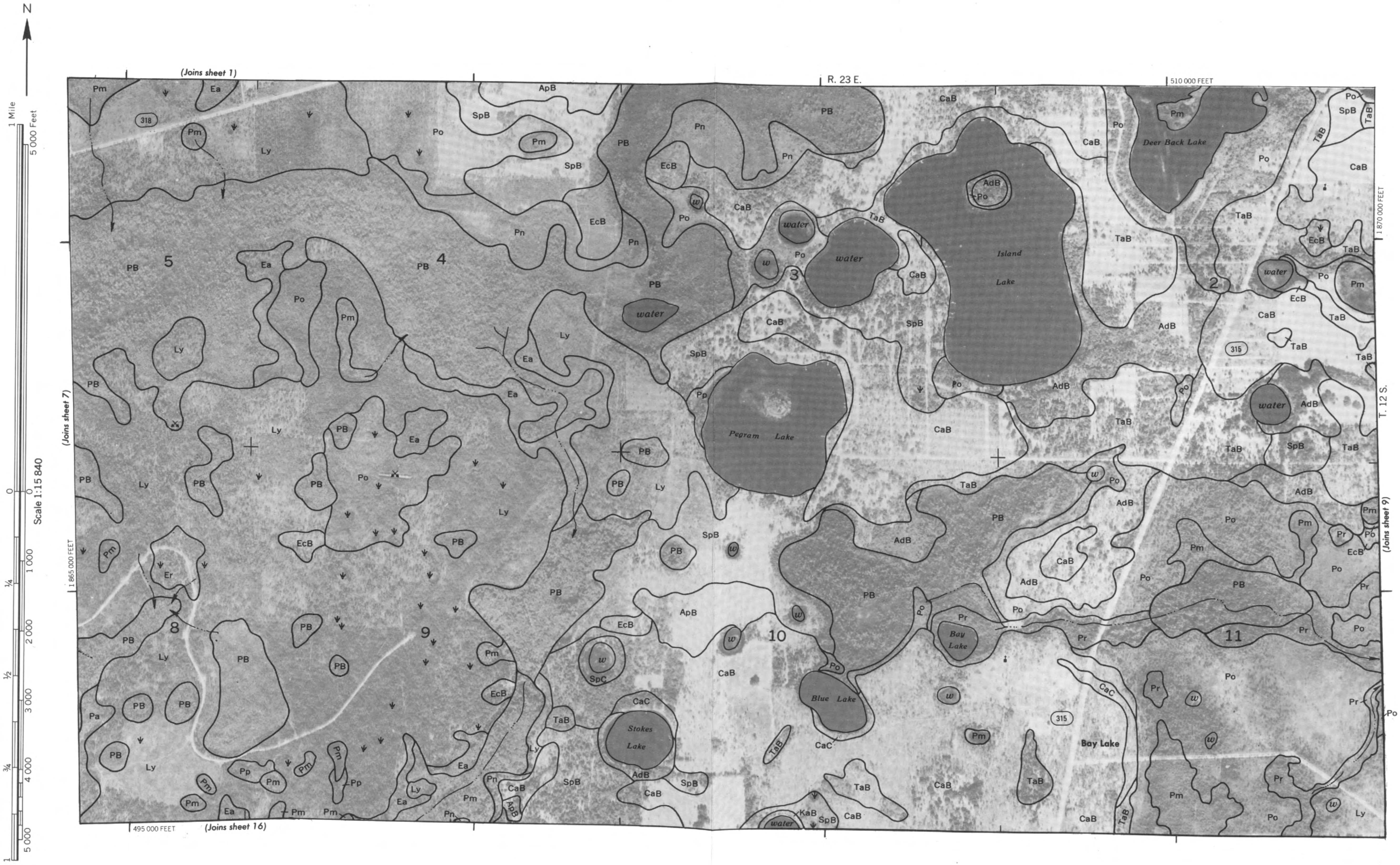

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1 000
2 000
1/2
3 000
3/4
4 000
5 000
ALACHUA COUNTY
R. 21 E.
440 000 FEET
1 870 000 FEET
T. 12 S.
(Joins sheet 5)
1 865 000 FEET
(Joins sheet 13)
425 000 FEET
ORANGE LAKE
ALACHUA COUNTY
Boardman
SEABOARD COAST LINE
441
25
Airstrip
water

# MARION COUNTY, FLORIDA — SHEET NUMBER 7

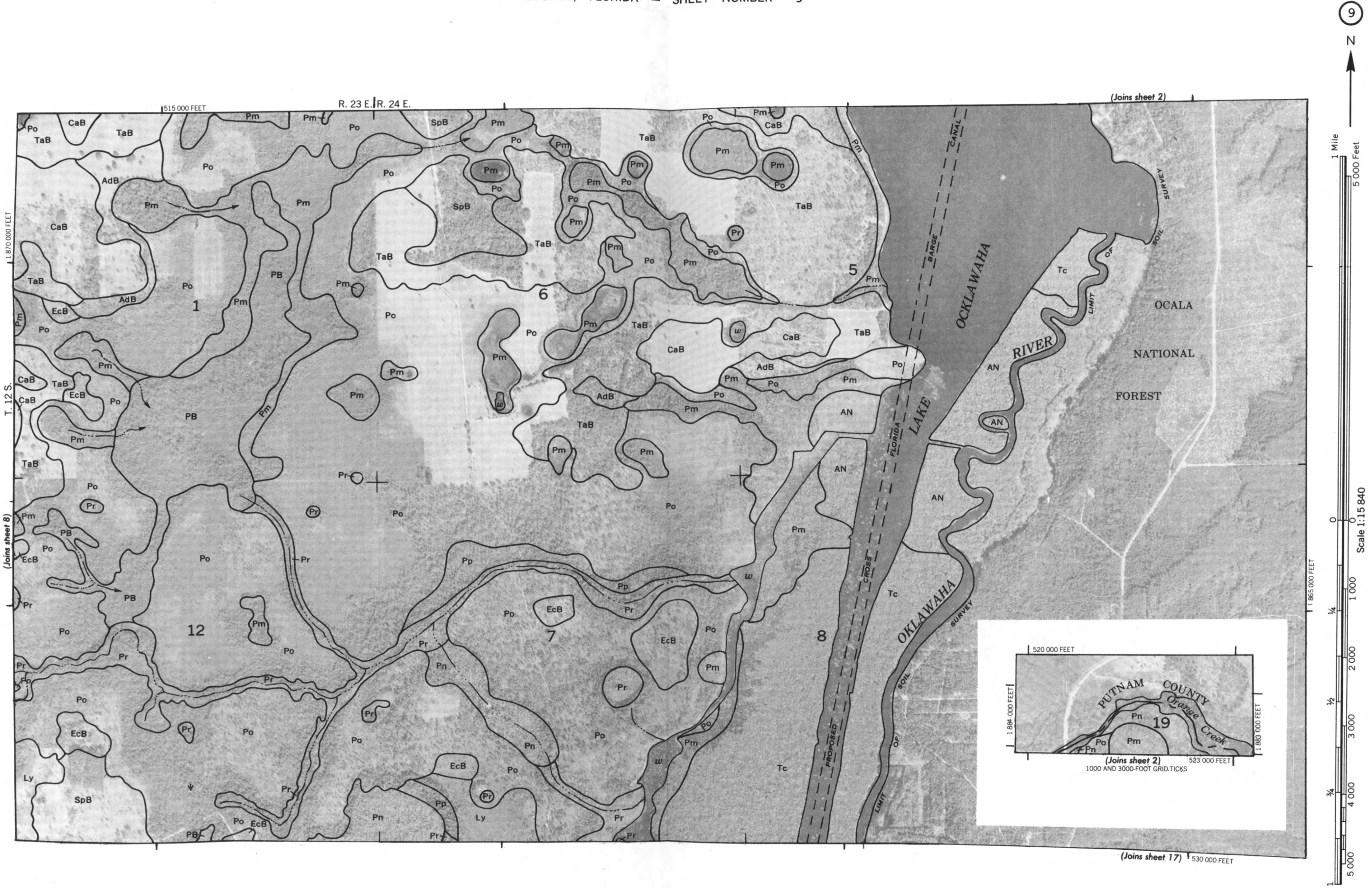

N
480 000 FEET
R. 23 E.
(Joins inset A, sheet 14)
SpB
Pp
Pm
Po
AdB
TaB
PB
SpB
Ly
TaB
AdB
Po
Pn
Pm
6
AdB
Pp
Po
5
AdB
Ea
Pm
Ea
Pp
PB
1 870 000 FEET
PUTNAM COUNTY
Orange Creek
PB
Pm
TaB
Pn
CaB
318
Po
Po
TaB
SpB
Pn
Pn
To
Pp
Ly
T. 12 S.
(Joins sheet 8)
Po
Pn
Po
Pp
SpB
Pm
Pr
AdB
SpB
SpB
w
Pp
CaB
Pm
w
Po
JuB
SpB
Ly
Pm
Pm
Ly
Ly
1 865 000 FEET
ALACHUA COUNTY
To
PB
Ly
Pm
Bf
7
Po
PB
8
Pa
Pm
Ly
Ea
Pm
Pn
Po
Ly
Bf
To
Pn
Pm
Po
Ly
318
Pn
Pm
Po
Tc
w
Bf
PB
SpB
Po
PB
PB
Bf
Tc
Ly
To
Pp
SpB
Pa
Ly
AdB
Pm
Ly
490 000 FEET
(Joins sheet 15)
1 Mile
5 000 Feet
0
0
¼
1 000
2 000
½
3 000
¾
4 000
5 000
1
Scale 1:15 840

⑧

# MARION COUNTY, FLORIDA — SHEET NUMBER 8

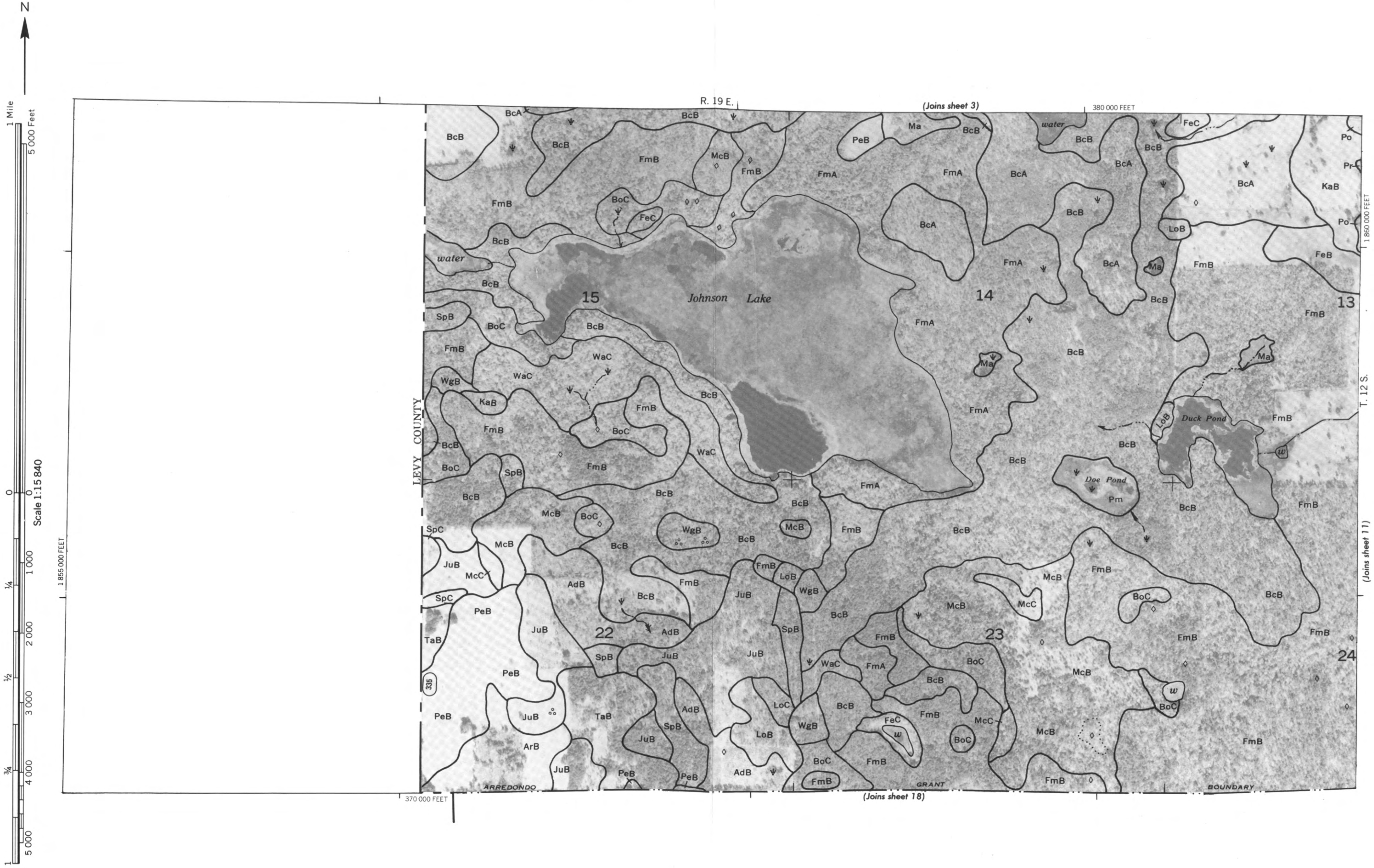

N
(Joins sheet 1)
R. 23 E.
510 000 FEET
1 870 000 FEET
T. 12 S.
(Joins sheet 9)
(Joins sheet 7)
1 865 000 FEET
495 000 FEET
(Joins sheet 16)
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
318
315
Deer Back Lake
Island Lake
Pegram Lake
Bay Lake
Blue Lake
Stokes Lake
water
w
2
3
4
5
8
9
10
11
PB
Ly
Po
Pm
Ea
EcB
Er
Pa
Pp
Pn
ApB
SpB
CaB
CaC
TaB
AdB
KaB
SpC
Pr

MARION COUNTY, FLORIDA — SHEET NUMBER 9



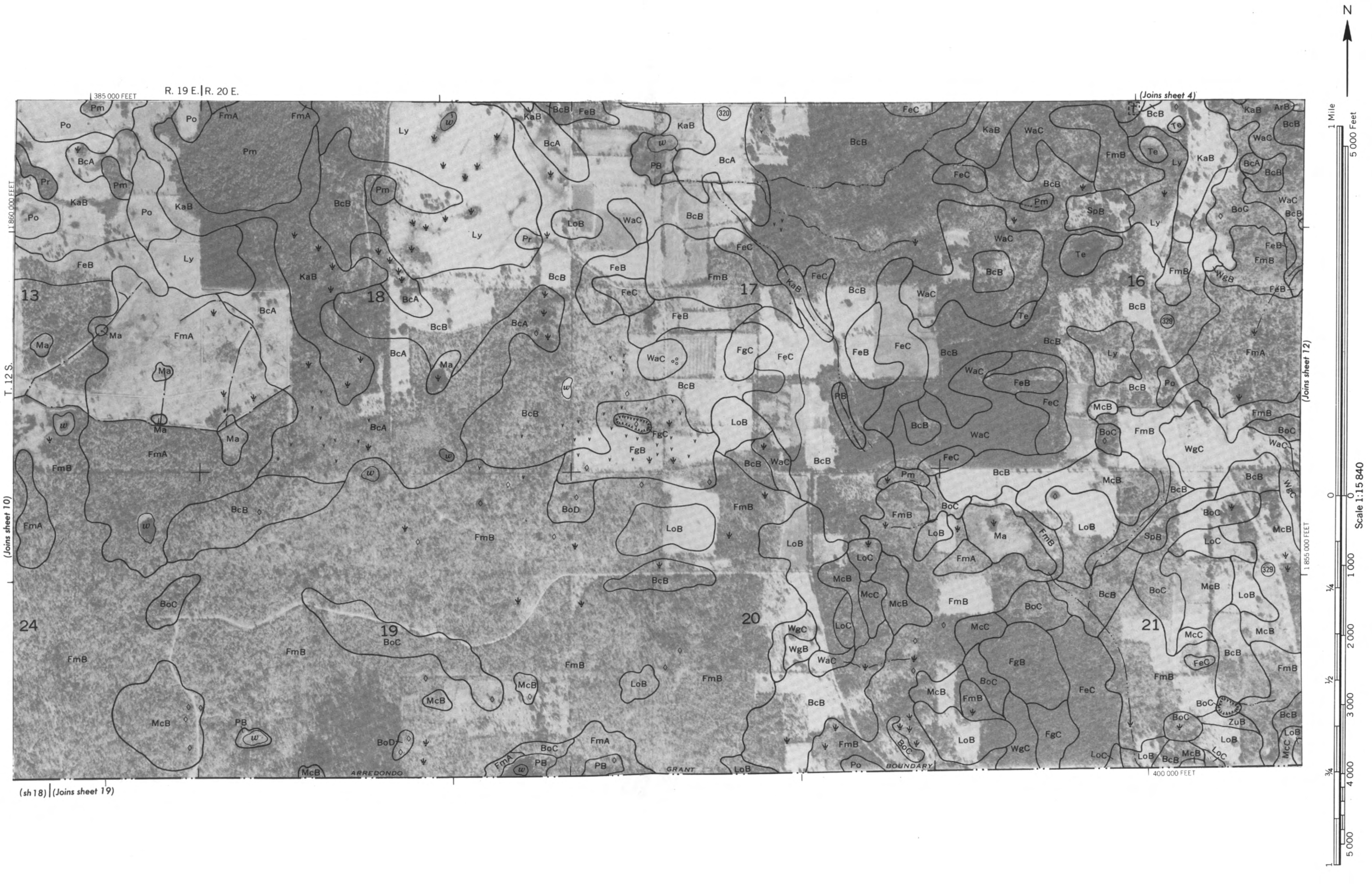
9
N
(Joins sheet 2)
515 000 FEET
R. 23 E. | R. 24 E.
1 870 000 FEET
T. 12 S.
(Joins sheet 8)
1 865 000 FEET
(Joins sheet 17)
530 000 FEET
1
5
6
7
8
12
PB
Po
Pm
Pr
Pp
Pn
TaB
CaB
AdB
EcB
SpB
Ly
Tc
AN
w
OCKLAWAHA
LAKE
PROPOSED CROSS FLORIDA BARGE CANAL
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
OCALA NATIONAL FOREST
520 000 FEET
1 884 000 FEET
1 883 000 FEET
PUTNAM COUNTY
Orange Creek
19
(Joins sheet 2)
523 000 FEET
1000 AND 3000-FOOT GRID TICKS
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000

# MARION COUNTY, FLORIDA — SHEET NUMBER 10


N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
R. 19 E.
(Joins sheet 3)
380 000 FEET
1 860 000 FEET
T. 12 S.
(Joins sheet 11)
(Joins sheet 18)
370 000 FEET
1 855 000 FEET
LEVY COUNTY
ARREDONDO
GRANT
BOUNDARY
Johnson Lake
Duck Pond
Doe Pond
15
14
13
22
23
24
335
water
w
BcA
BcB
FmB
McB
FmA
PeB
Ma
BoC
FeC
SpB
WaC
WgB
KaB
SpC
JuB
McC
AdB
TaB
ArB
LoB
LoC
FeB
Po
Pr
Pm
MaC

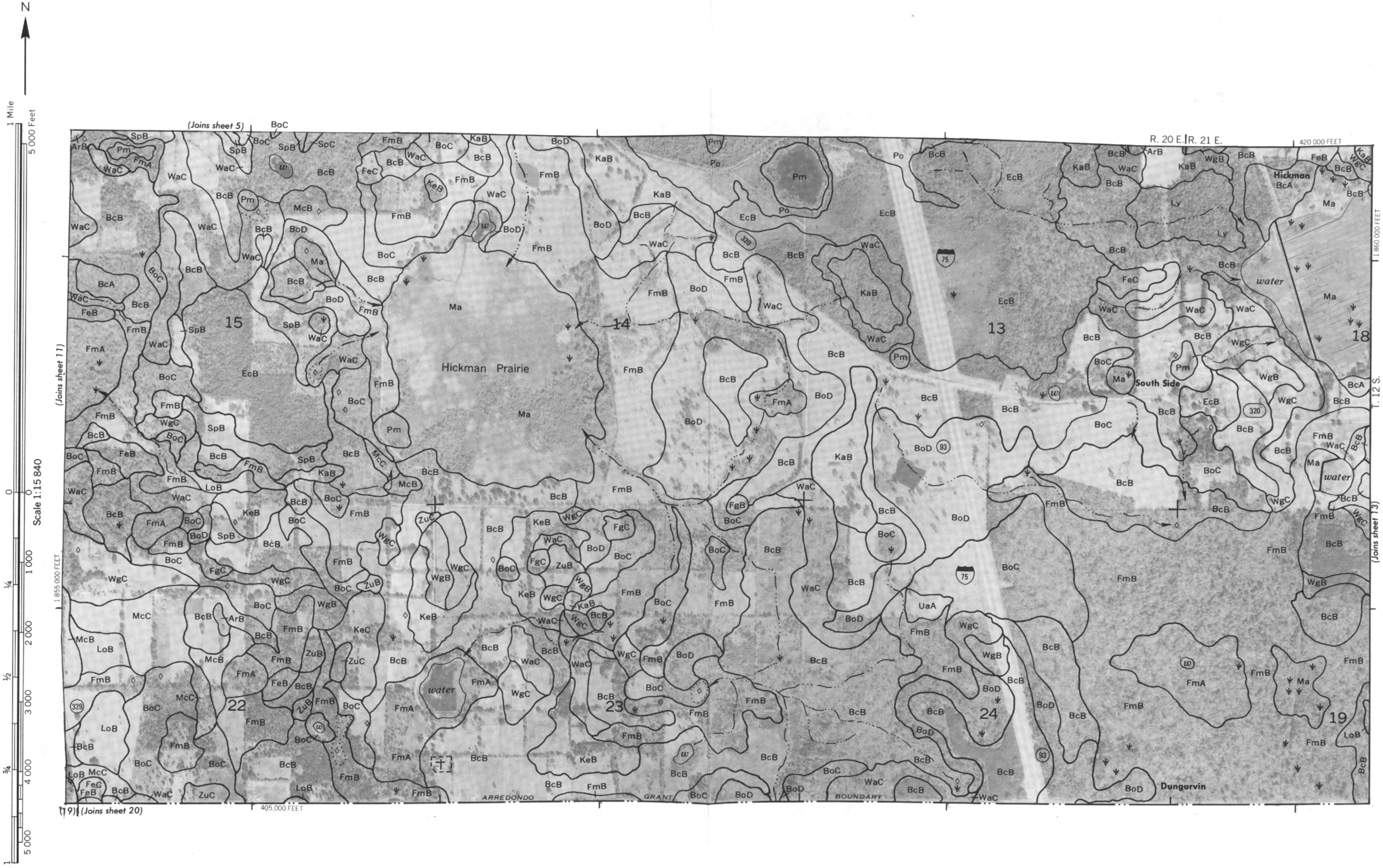
# MARION COUNTY, FLORIDA — SHEET NUMBER 11

⑪

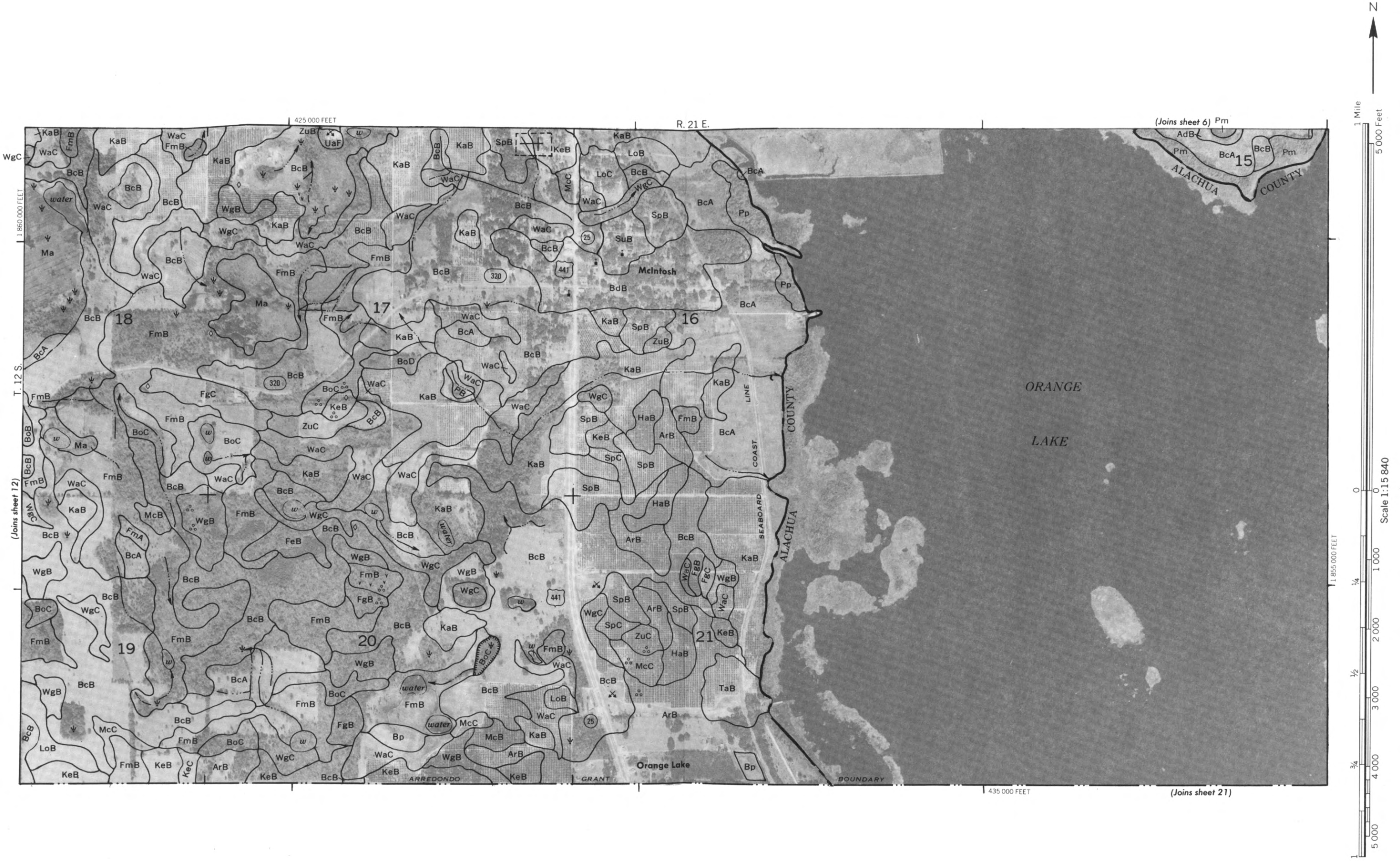

N
385 000 FEET
R. 19 E. | R. 20 E.
(Joins sheet 4)
1 860 000 FEET
T. 12 S.
(Joins sheet 10)
(Joins sheet 12)
1 855 000 FEET
400 000 FEET
(sh 18) | (Joins sheet 19)
13
18
17
16
24
19
20
21
320
329
ARREDONDO
GRANT
BOUNDARY
Po
Pm
FmA
Ly
BcA
KaB
BcB
FeB
Pr
FeC
WaC
LoB
FmB
Ma
FgC
FgB
PB
BoD
BoC
McB
McC
LoC
WgC
WgB
Te
SpB
BoC
ArB
ZuB
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

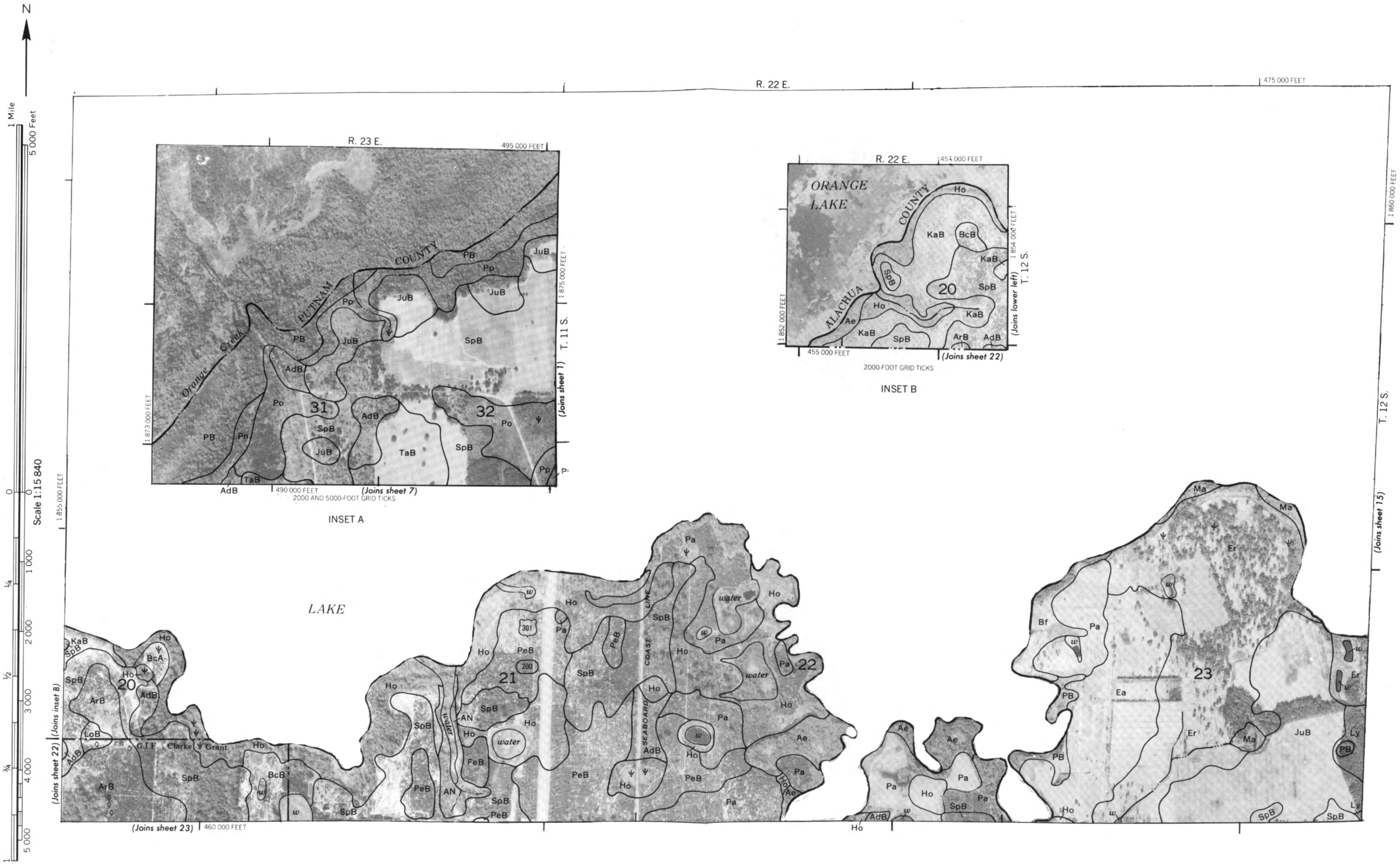
⑫

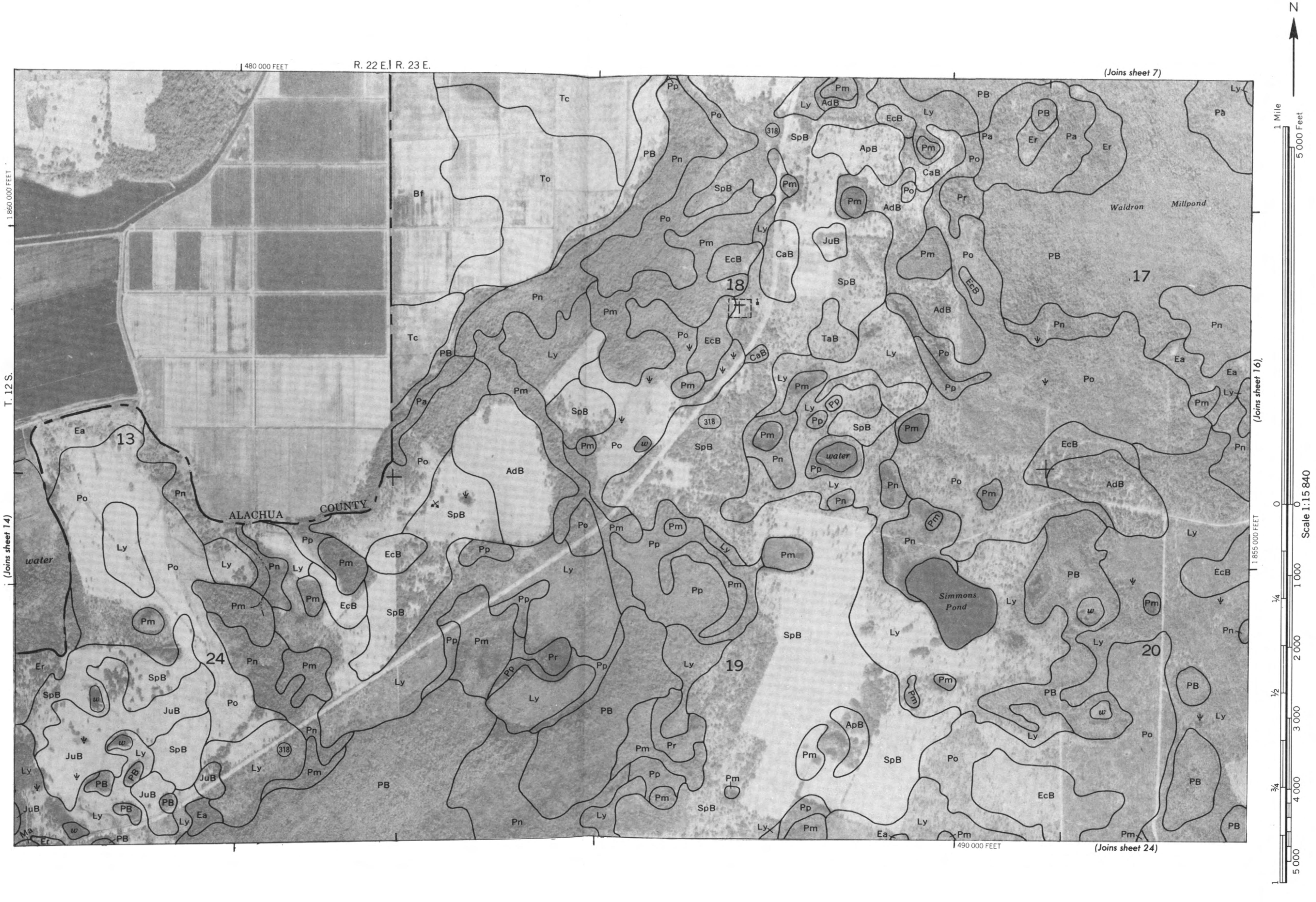
# MARION COUNTY, FLORIDA — SHEET NUMBER 12


N
Scale 1:15 840
1 Mile
¾
½
¼
0
5 000 Feet
4 000
3 000
2 000
1 000
0
(Joins sheet 5)
(Joins sheet 11)
(Joins sheet 13)
(Joins sheet 20)
(19)
R. 20 E.
R. 21 E.
T. 12 S.
420 000 FEET
1 860 000 FEET
1 855 000 FEET
405 000 FEET
ARREDONDO
GRANT
BOUNDARY
Hickman Prairie
Hickman
South Side
Dungarvin
water
w
15
14
13
18
22
23
24
19
75
320
93
329
SpB
ArB
Pm
WaC
FmA
BoC
SpC
BcB
McB
BoD
BcA
FeB
FmB
EcB
WgC
BoC
LoB
KeB
FgC
SpB
McC
ZuC
ZuB
KeC
FeC
KaB
Ma
Po
Ly
FgB
WgB
UaA
BcA
FmA

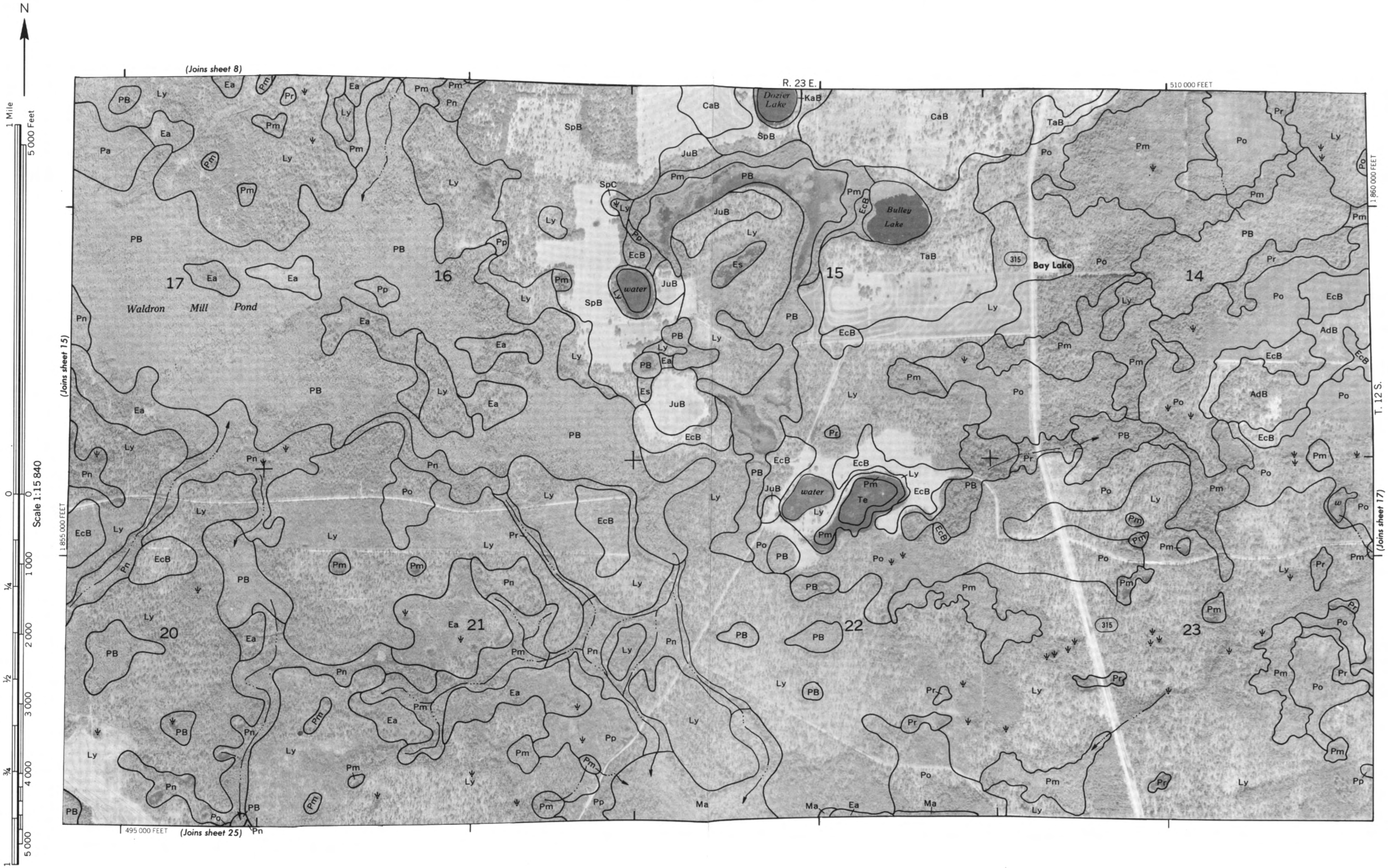
# MARION COUNTY, FLORIDA — SHEET NUMBER 13


N
425 000 FEET
R. 21 E.
(Joins sheet 6)
1 860 000 FEET
T. 12 S.
(Joins sheet 12)
McIntosh
ORANGE
LAKE
ALACHUA
COUNTY
COAST
LINE
SEABOARD
BOUNDARY
ARREDONDO
GRANT
Orange Lake
1 855 000 FEET
435 000 FEET
(Joins sheet 21)
15
16
17
18
19
20
21
441
320
25
water
WgC
KaB
BcB
WaC
FmB
Ma
BcA
FgC
BoC
ZuC
SpB
ArB
HaB
TaB
LoB
KeB
McC
Bp
Pp
Pm
AdB
UaF
ZuB
LoC
SuB
BdB
BoD
PB
FeB
FgB
McB
MgB
SpC
KeC
ArB
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

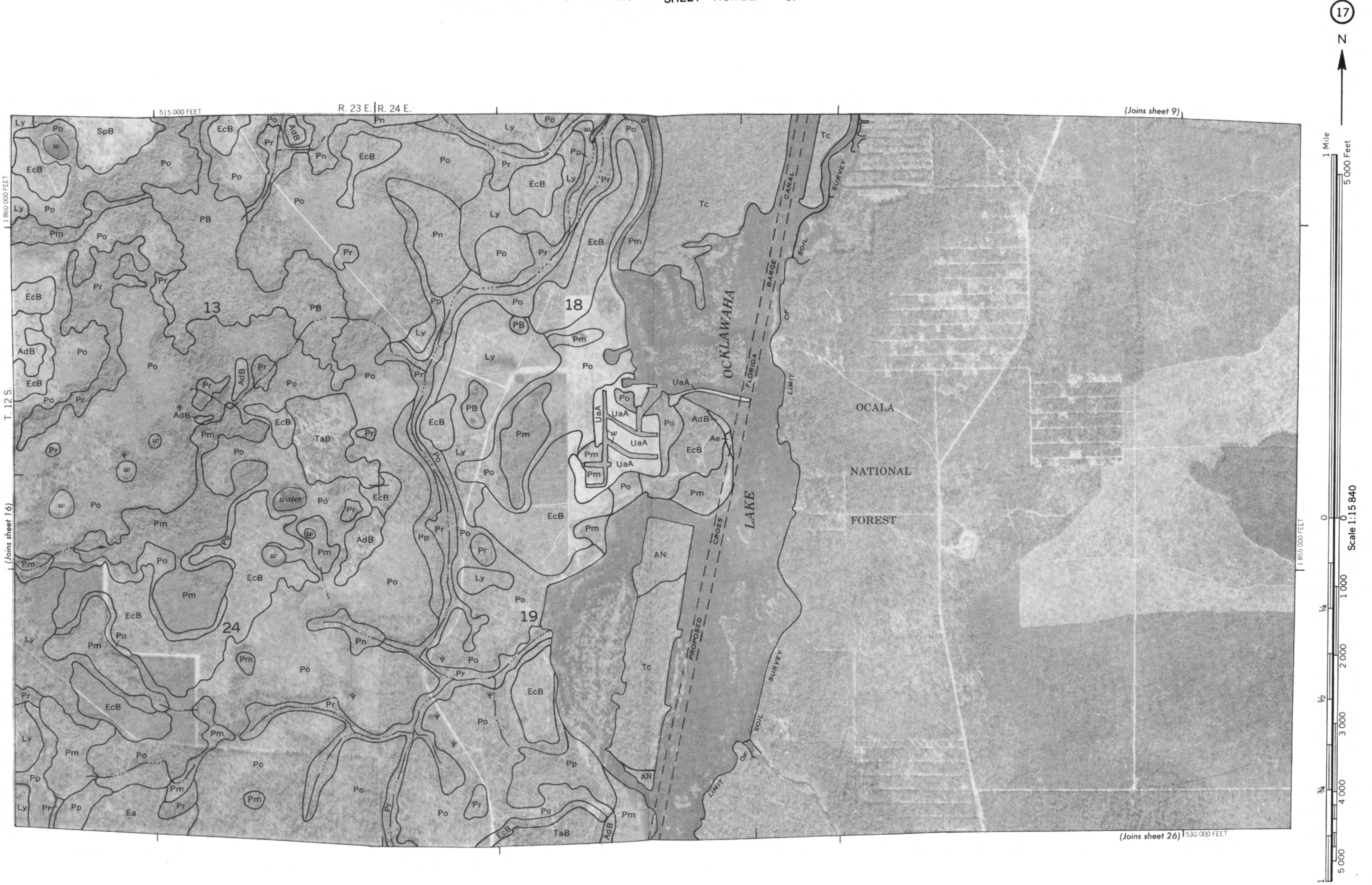

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
R. 22 E.
475 000 FEET
1 860 000 FEET
T. 12 S.
(Joins sheet 15)
1 855 000 FEET
R. 23 E.
495 000 FEET
1 875 000 FEET
T. 11 S.
(Joins sheet 1)
1 873 000 FEET
490 000 FEET
(Joins sheet 7)
2000 AND 5000-FOOT GRID TICKS
INSET A
Orange Creek
PUTNAM
COUNTY
31
32
PB
Pp
JuB
SpB
AdB
Po
Pn
TaB
R. 22 E.
453 000 FEET
ORANGE LAKE
ALACHUA
COUNTY
1 854 000 FEET
(Joins lower left)
1 852 000 FEET
455 000 FEET
(Joins sheet 22)
2000-FOOT GRID TICKS
INSET B
Ho
KaB
BcB
20
SpB
Ae
ArB
AdB
LAKE
(Joins inset B)
(Joins sheet 22)
(Joins sheet 23)
460 000 FEET
G.I.F. Clarke Grant
20
21
22
23
301
200
SEABOARD COAST LINE
water
w
KaB
BcA
ArB
LoB
FeB
AN
PeB
Pa
Ea
Er
Bf
Ma
Ly
JuB


N
480 000 FEET
R. 22 E.
R. 23 E.
(Joins sheet 7)
(Joins sheet 14)
(Joins sheet 16)
(Joins sheet 24)
490 000 FEET
1 860 000 FEET
1 855 000 FEET
T. 12 S.
ALACHUA COUNTY
Waldron Millpond
Simmons Pond
water
13
17
18
19
20
24
318
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

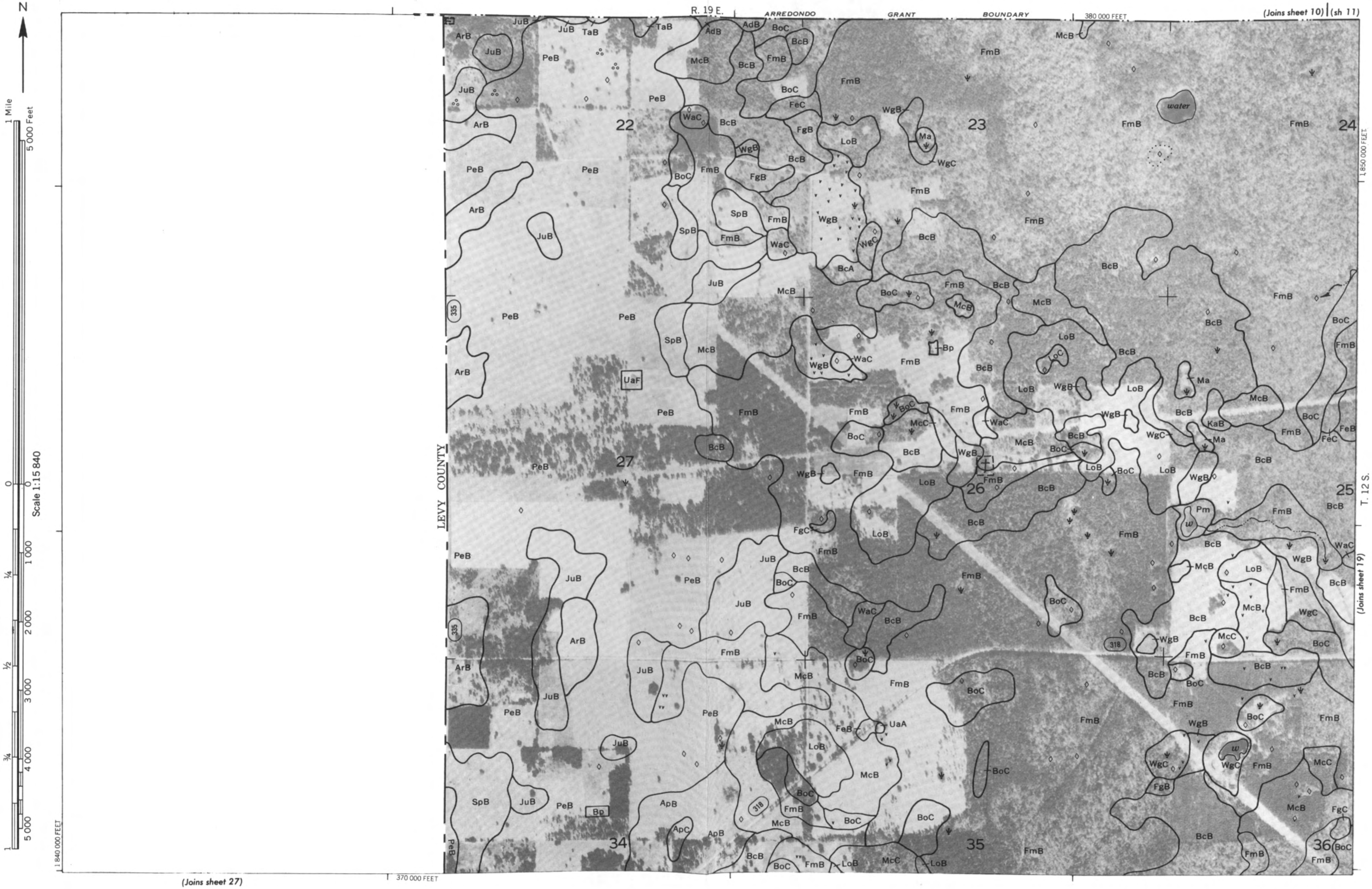
# MARION COUNTY, FLORIDA — SHEET NUMBER 16


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1000
2000
3000
4000
5 000
(Joins sheet 8)
(Joins sheet 15)
(Joins sheet 17)
(Joins sheet 25)
R. 23 E.
T. 12 S.
510 000 FEET
495 000 FEET
1 860 000 FEET
1 855 000 FEET
Waldron Mill Pond
Dozier Lake
Bulley Lake
Bay Lake
water
315
14
15
16
17
20
21
22
23
PB
Ly
Ea
Pa
Pm
Pr
Pn
Pp
Po
EcB
SpB
SpC
JuB
CaB
KaB
TaB
AdB
Es
Te
Ma
w

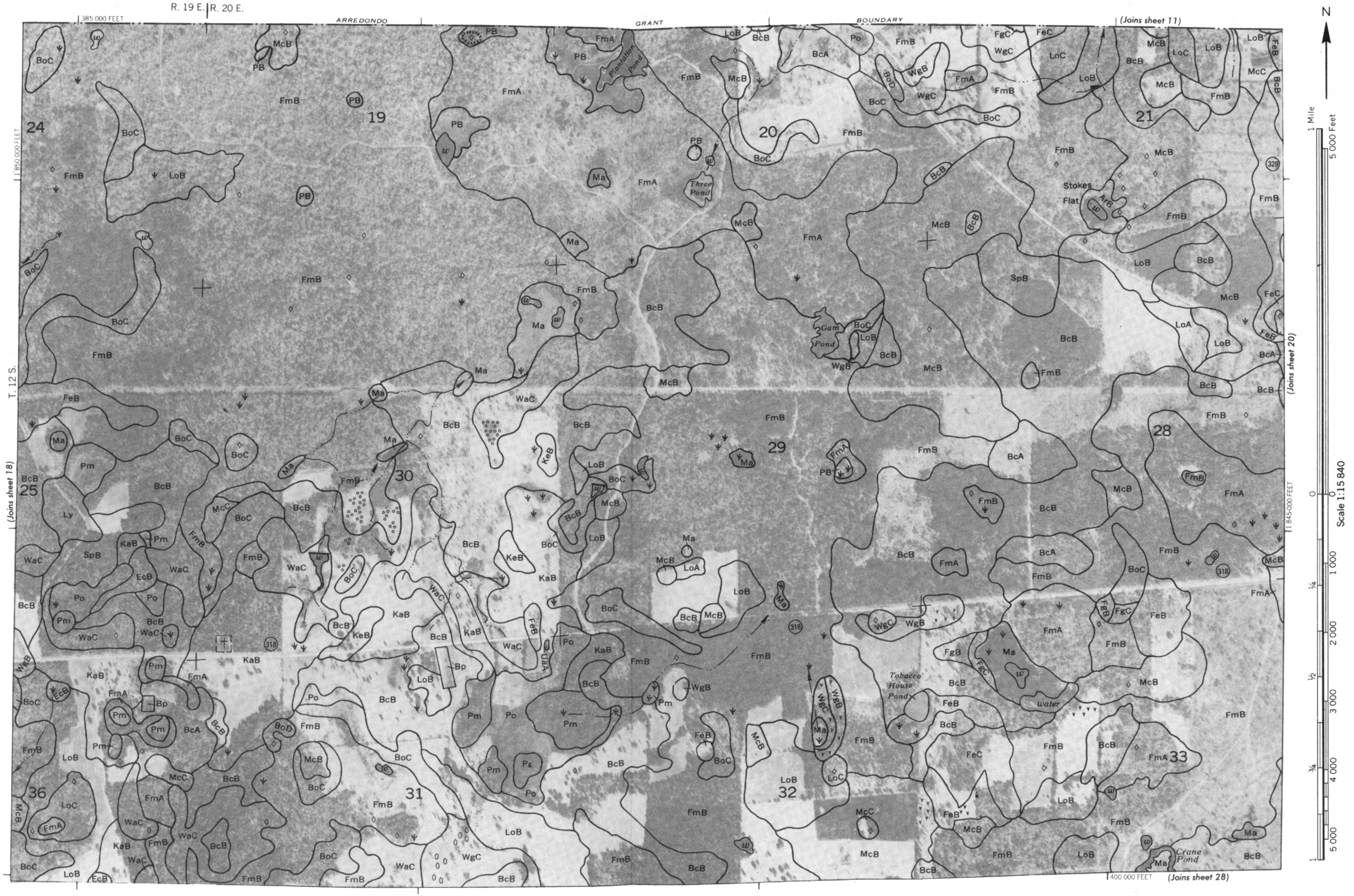
# MARION COUNTY, FLORIDA — SHEET NUMBER 17


17
N
515 000 FEET
R. 23 E. | R. 24 E.
(Joins sheet 9)
1 860 000 FEET
T. 12 S.
(Joins sheet 16)
1 855 000 FEET
(Joins sheet 26)
530 000 FEET
OCKLAWAHA
LAKE
FLORIDA
CROSS
BARGE
CANAL
PROPOSED
LIMIT OF SOIL SURVEY
OCALA
NATIONAL
FOREST
13
18
19
24
water
Scale 1:15 840
1 Mile
5 000 Feet
0
¼
½
¾
1 000
2 000
3 000
4 000
5 000

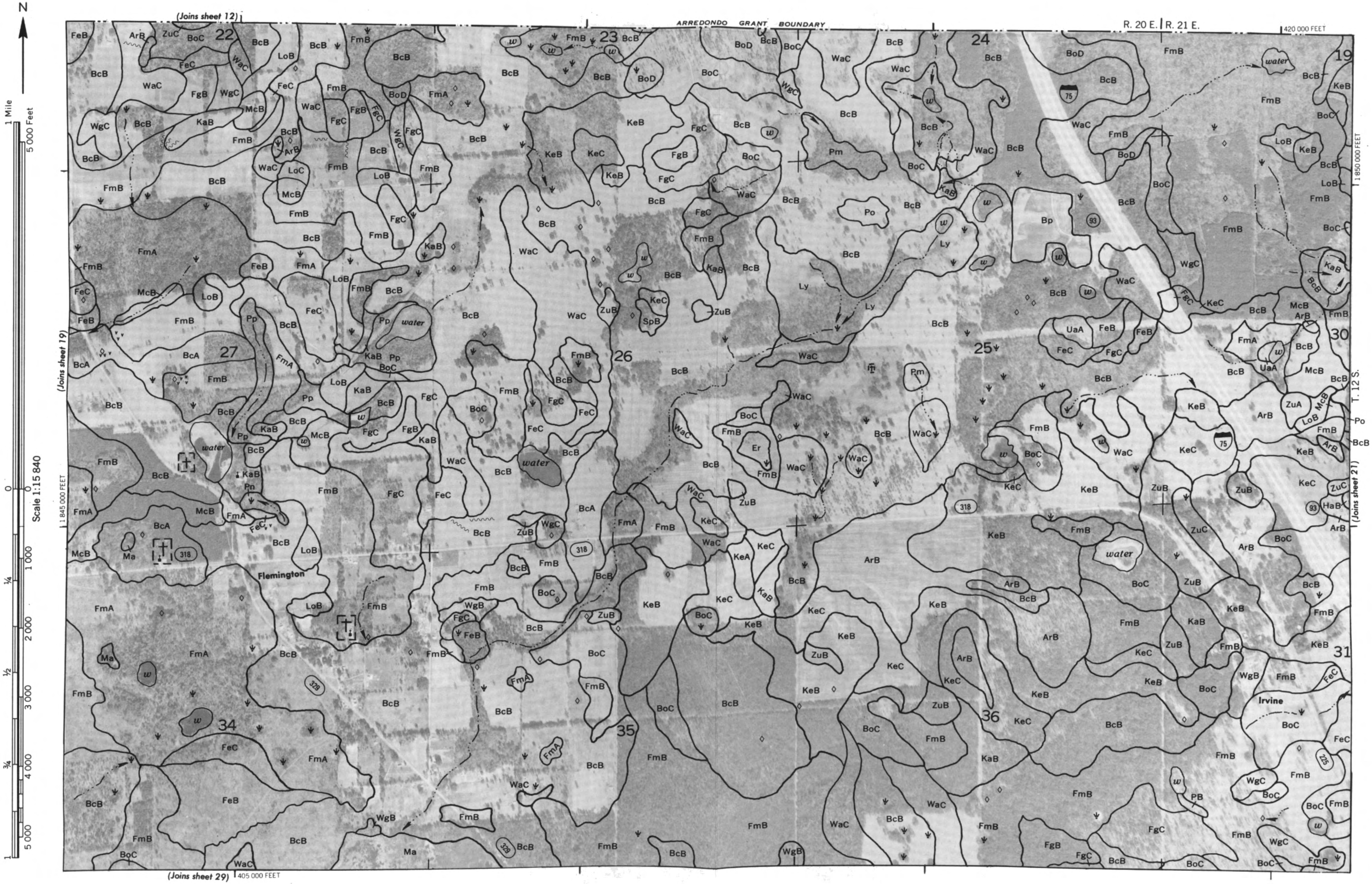
# MARION COUNTY, FLORIDA — SHEET NUMBER 18


N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
Scale 1:15 840
R. 19 E.
ARREDONDO GRANT BOUNDARY
380 000 FEET
(Joins sheet 10)
(sh 11)
1 850 000 FEET
T. 12 S.
(Joins sheet 19)
(Joins sheet 27)
370 000 FEET
1 840 000 FEET
LEVY COUNTY
335
318
22
23
24
25
26
27
34
35
36
water
w
ArB
JuB
TaB
AdB
AdB
BoC
BcB
McB
FmB
FeC
FgB
WaC
WgB
WgC
LoB
Ma
PeB
SpB
BcA
FgC
Bp
UaF
UaA
LoC
McC
KaB
Pm
FeB
ApB
ApC

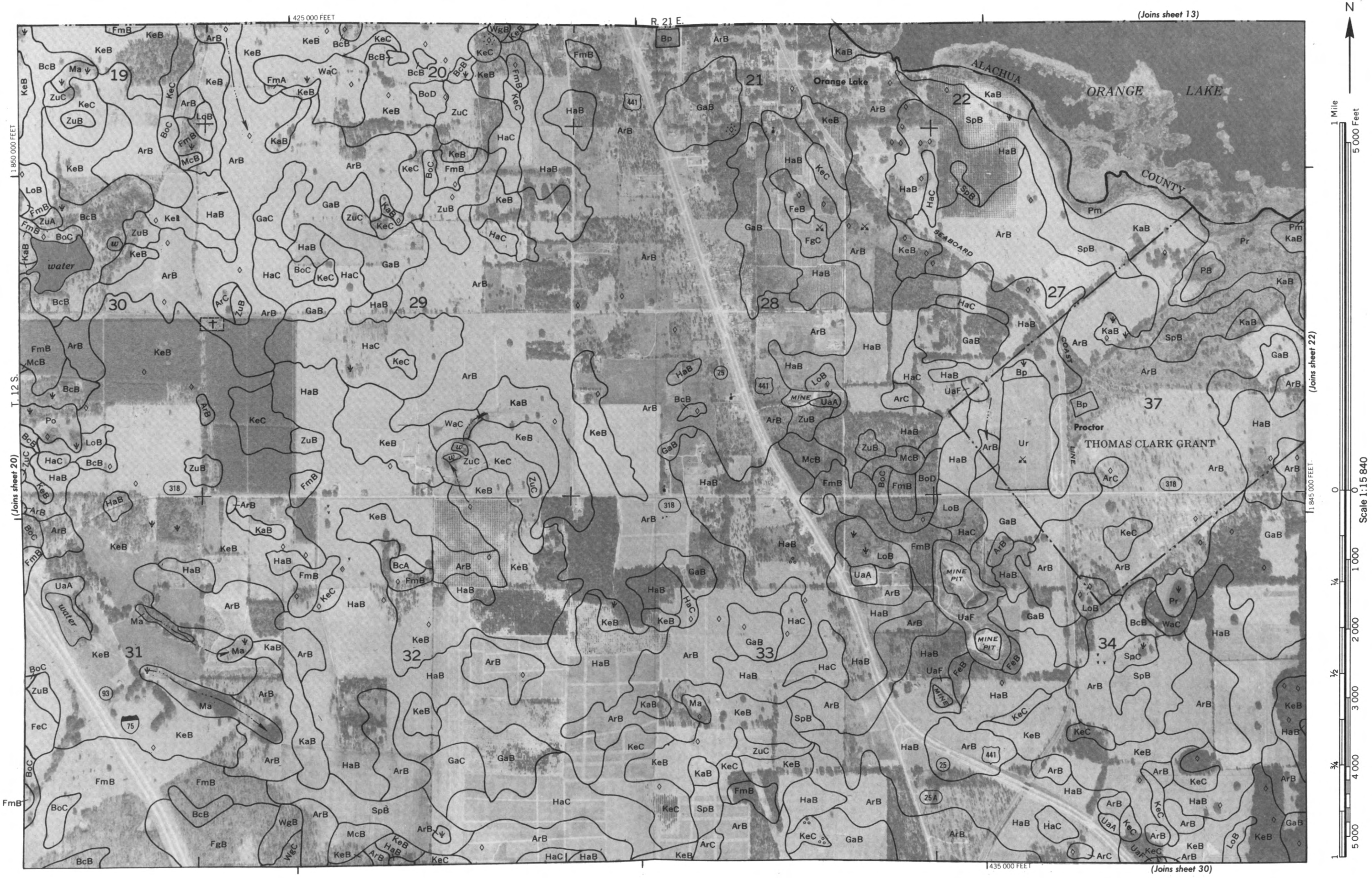
MARION COUNTY, FLORIDA — SHEET NUMBER 19

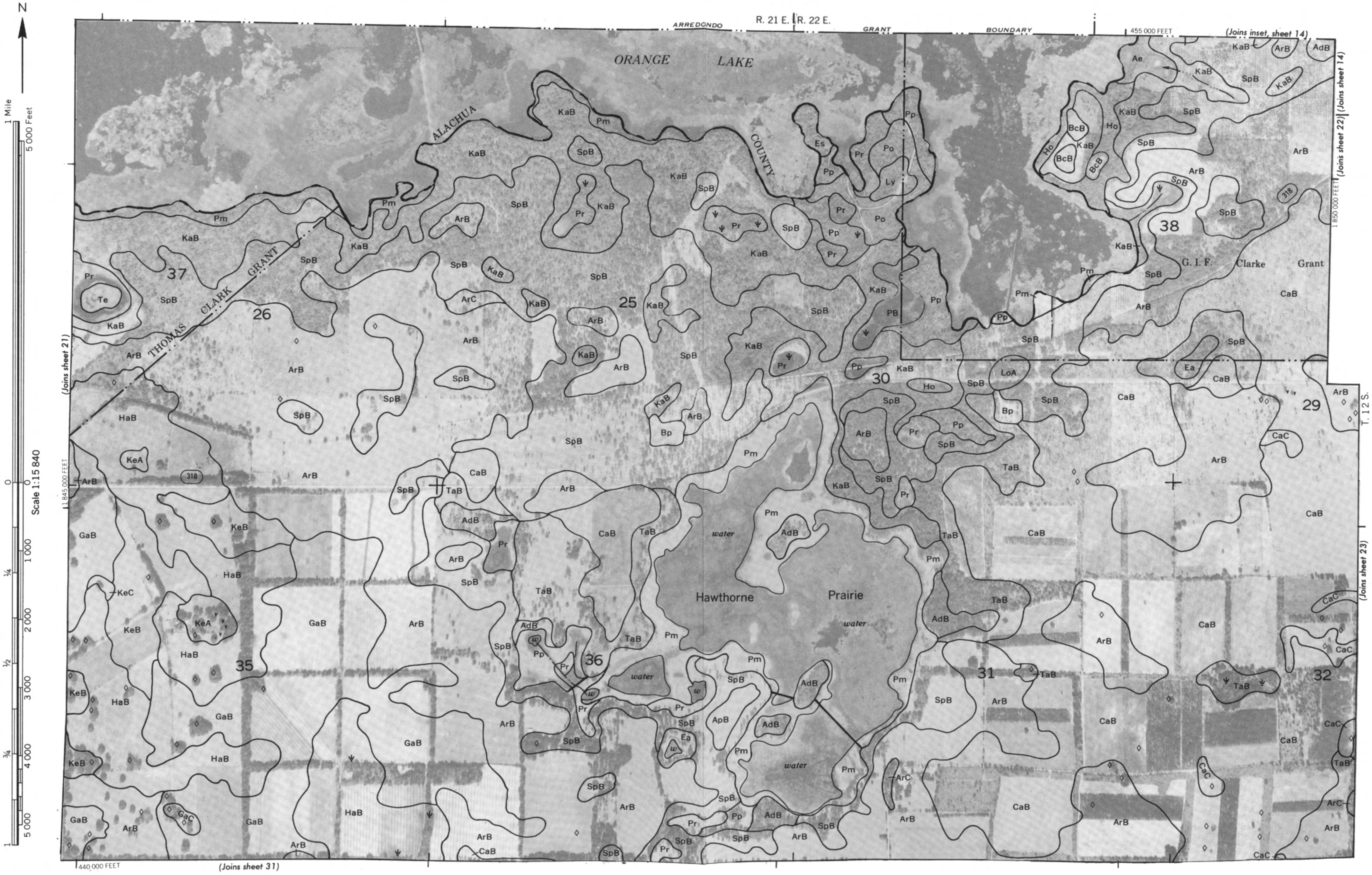

R. 19 E.
R. 20 E.
385 000 FEET
ARREDONDO
GRANT
BOUNDARY
(Joins sheet 11)
N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
1 850 000 FEET
T. 12 S.
(Joins sheet 18)
1 845 000 FEET
(Joins sheet 20)
400 000 FEET
(Joins sheet 28)
19
20
21
24
25
28
29
30
31
32
33
36
Plantation Pond
Three Pond
Gum Pond
Stokes Flat
Tobacco House Pond
Crane Pond
water
329
318
BoC
McB
PB
FmB
FmA
LoB
Ma
BcB
BcA
SpB
WgB
WgC
FgC
FeC
LoC
McC
BoD
Po
Pm
Ly
KaB
EcB
WaC
KeB
Bp
UaA
LoA
FeB
FgB
ArB
Ps
w

MARION COUNTY, FLORIDA — SHEET NUMBER 20

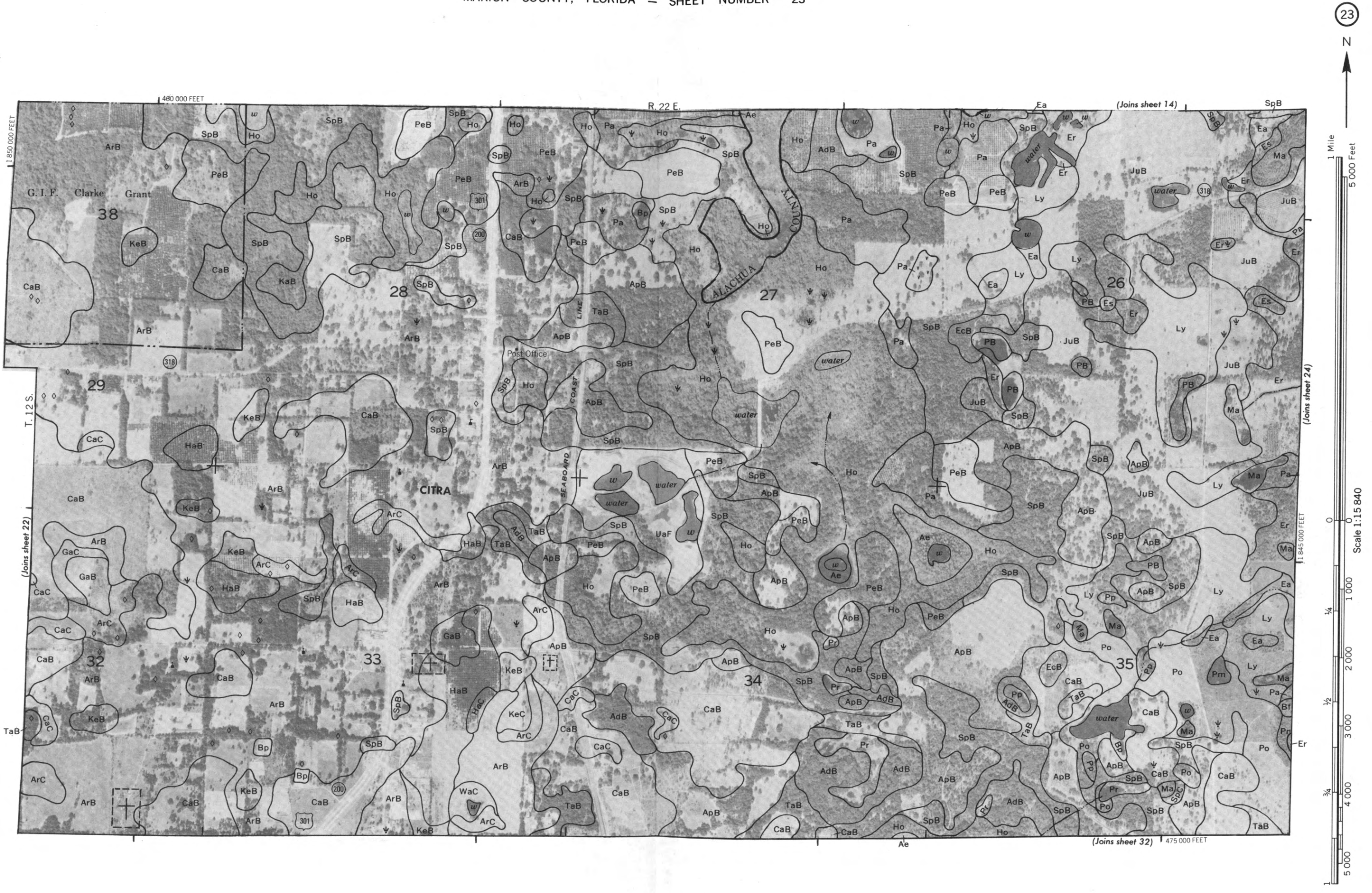

N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
1/4
2 000
1/2
3 000
3/4
4 000
5 000
1
(Joins sheet 12)
ARREDONDO GRANT BOUNDARY
R. 20 E.
R. 21 E.
420 000 FEET
1 850 000 FEET
1 845 000 FEET
(Joins sheet 19)
(Joins sheet 21)
(Joins sheet 29)
405 000 FEET
T. 12 S.
22
23
24
19
27
26
25
30
34
35
36
31
Flemington
Irvine
75
93
318
329
225
water

MARION COUNTY, FLORIDA — SHEET NUMBER 21

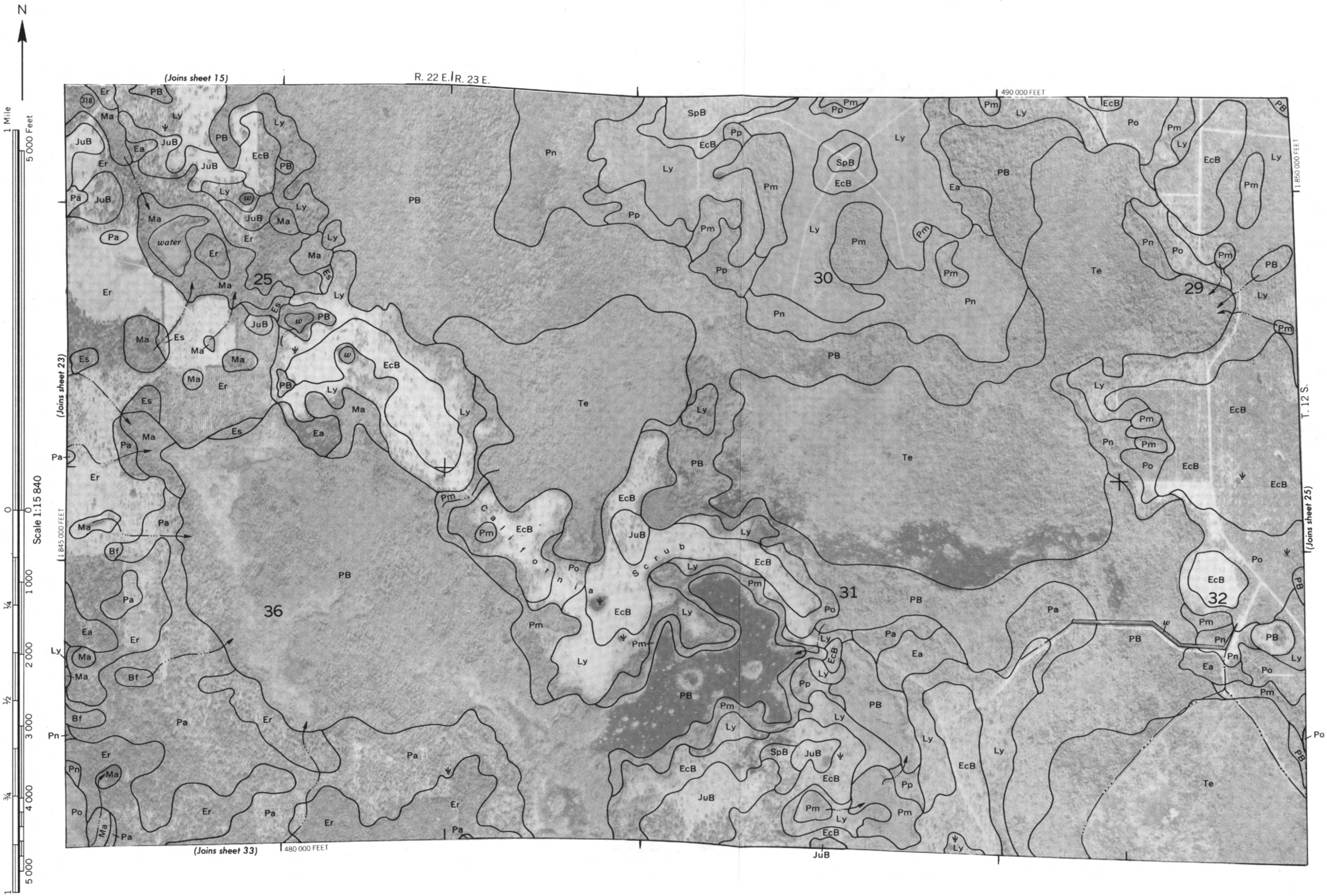

21
N
425 000 FEET
R. 21 E.
(Joins sheet 13)
ALACHUA COUNTY
ORANGE LAKE
Orange Lake
SEABOARD
COAST LINE
Proctor
THOMAS CLARK GRANT
1 850 000 FEET
1 845 000 FEET
435 000 FEET
T. 12 S.
(Joins sheet 20)
(Joins sheet 22)
(Joins sheet 30)
19
20
21
22
27
28
29
30
31
32
33
34
37
water
MINE
MINE PIT
Ur
441
25
25A
318
93
75
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
1/4
1/2
3/4
1
ArB
KeB
KeC
HaB
HaC
GaB
GaC
KaB
FmB
FmA
BcB
BcA
BoC
BoD
ZuB
ZuC
ZuA
LoB
Ma
McB
WaC
WgB
WgC
SpB
SpC
Pm
Pr
PB
Bp
Po
UaA
UaF
FeB
FeC
FgB
FgC
ArC
MeB


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
R. 21 E.
R. 22 E.
ARREDONDO
GRANT
BOUNDARY
455 000 FEET
(Joins inset, sheet 14)
(Joins sheet 14)
(Joins sheet 22)
1 850 000 FEET
T. 12 S.
(Joins sheet 23)
(Joins sheet 21)
1 845 000 FEET
440 000 FEET
(Joins sheet 31)
ORANGE
LAKE
ALACHUA
COUNTY
THOMAS
CLARK
GRANT
G. I. F.
Clarke
Grant
Hawthorne
Prairie
water
318
37
26
25
30
38
29
35
36
31
32
KaB
Pm
SpB
Pr
ArB
ArC
Te
HaB
KeA
KeB
KeC
GaB
GaC
CaB
CaC
TaB
AdB
ApB
Pp
Po
Ly
Es
PB
Ho
BcB
Ae
LoA
Bp
Ea
w

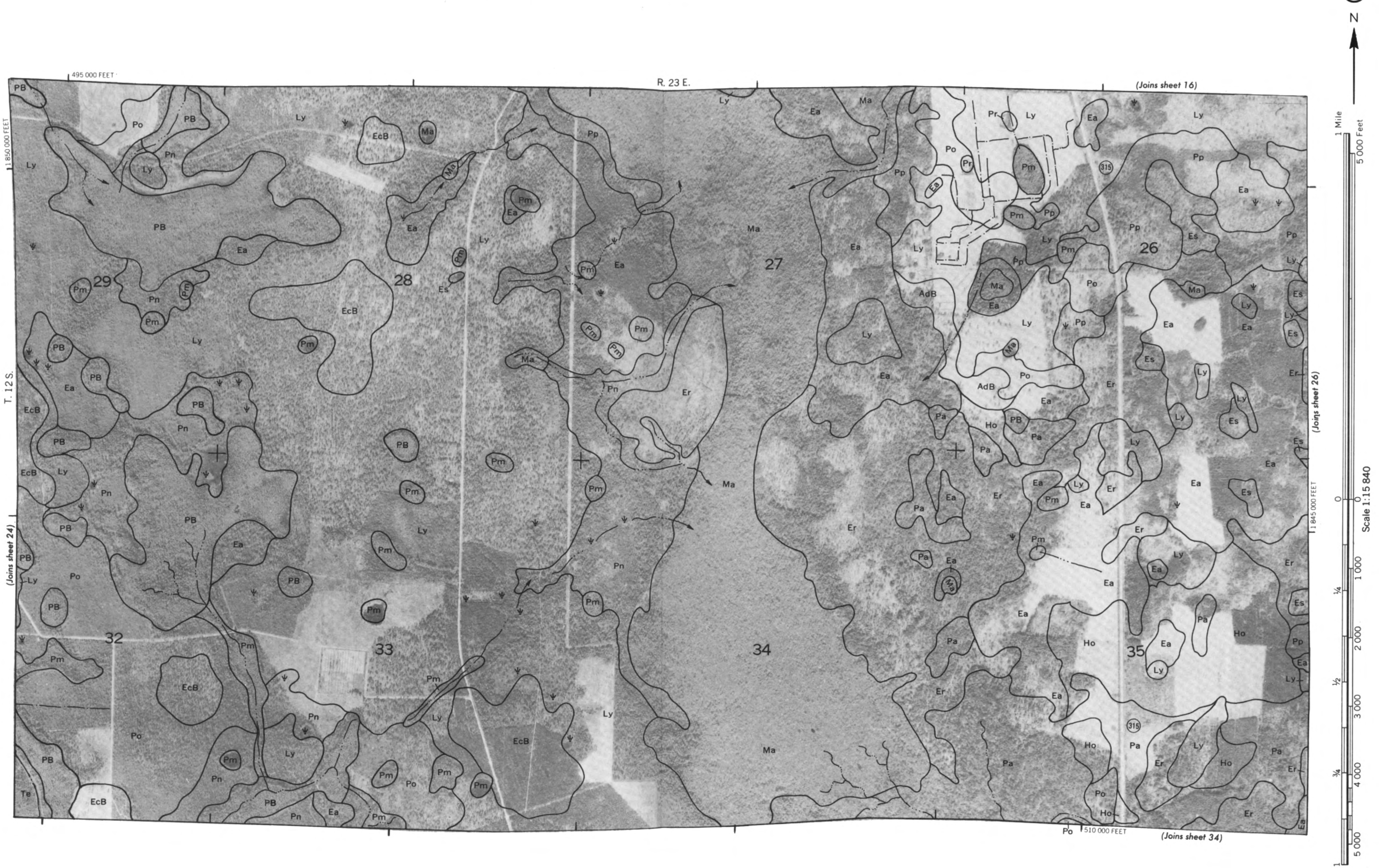
MARION COUNTY, FLORIDA — SHEET NUMBER 23


23
N
R. 22 E.
T. 12 S.
480 000 FEET
1 850 000 FEET
1 845 000 FEET
475 000 FEET
(Joins sheet 14)
(Joins sheet 24)
(Joins sheet 22)
(Joins sheet 32)
G. I. F. Clarke Grant
CITRA
Post Office
SEABOARD COAST LINE
ALACHUA COUNTY
38
28
29
27
26
32
33
34
35
301
200
318
water
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

# MARION COUNTY, FLORIDA — SHEET NUMBER 24

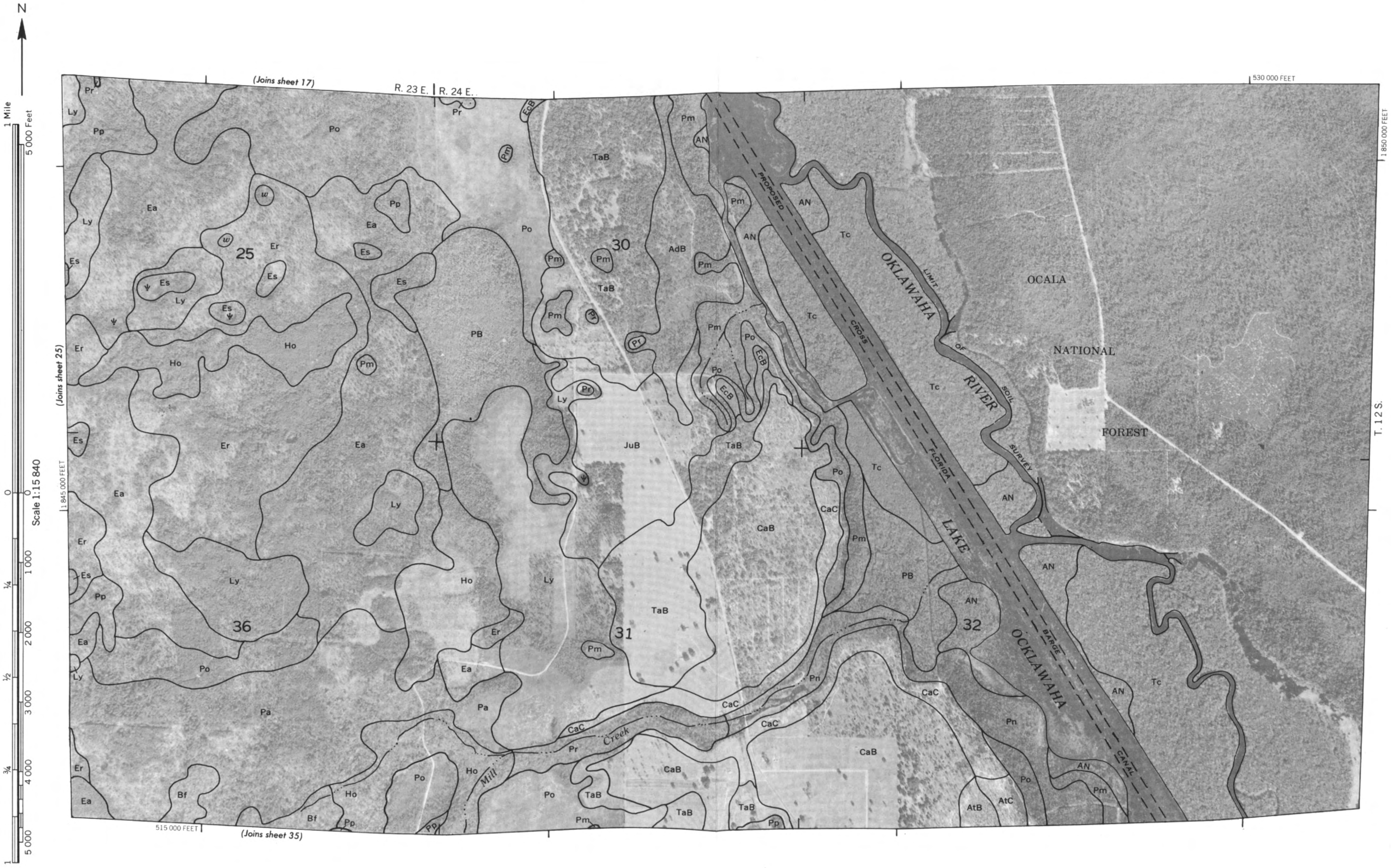

N
(Joins sheet 15)
R. 22 E.
R. 23 E.
490 000 FEET
1 850 000 FEET
T. 12 S.
(Joins sheet 25)
(Joins sheet 23)
1 845 000 FEET
(Joins sheet 33)
480 000 FEET
Scale 1:15 840
1 Mile
0
¼
½
¾
1
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
318
25
29
30
31
32
36
water
California Scrub
Er
PB
Ly
JuB
Ma
Ea
EcB
Pa
Es
Pn
Pp
Pm
SpB
Te
Po
Bf
w
Pa
Ly
Pn
Po
JuB

MARION COUNTY, FLORIDA — SHEET NUMBER 25

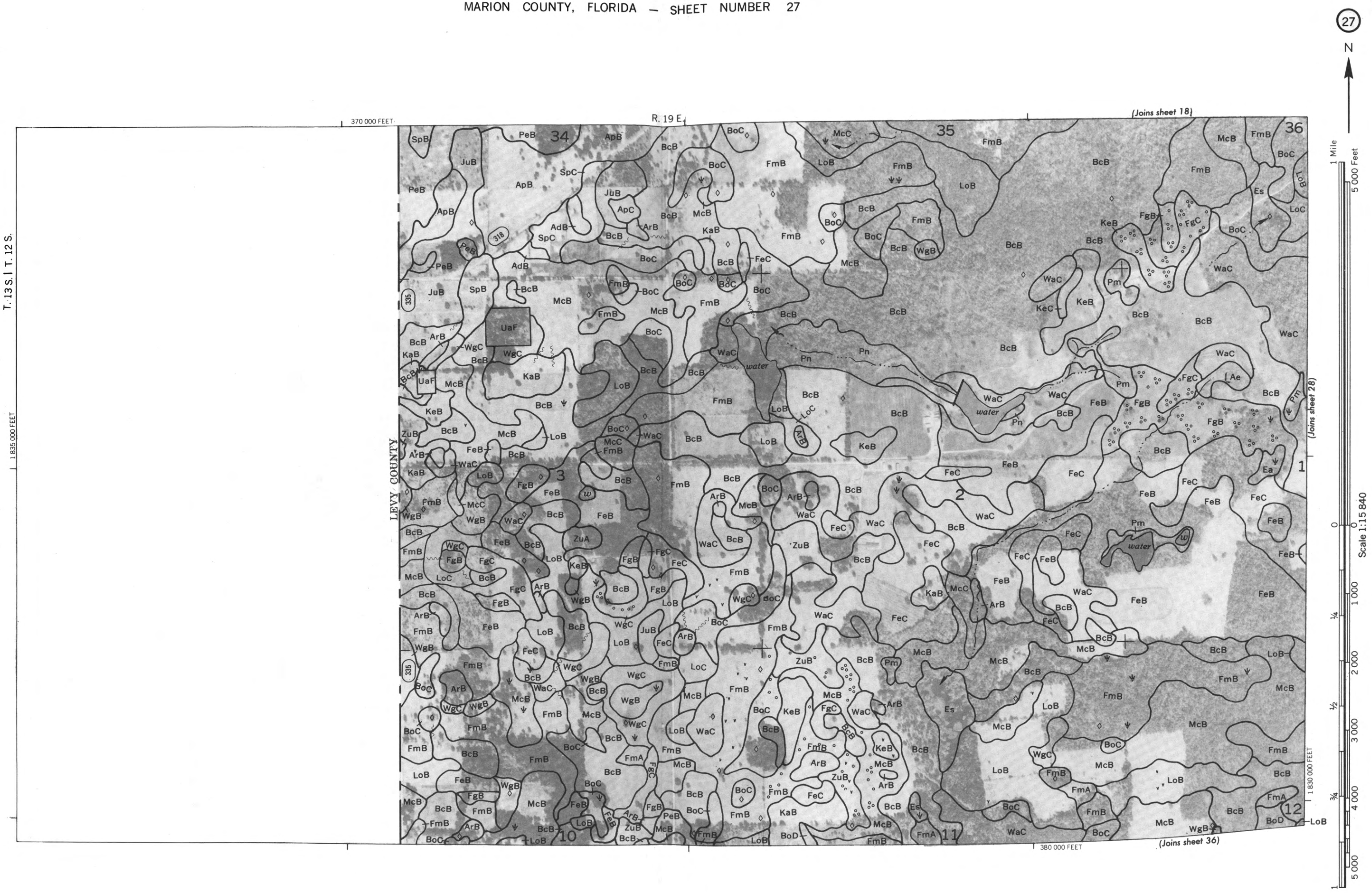


25
N
495 000 FEET
R. 23 E.
(Joins sheet 16)
1 850 000 FEET
T. 12 S.
(Joins sheet 24)
(Joins sheet 26)
1 845 000 FEET
510 000 FEET
(Joins sheet 34)
29
28
27
26
32
33
34
35
315
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000

MARION COUNTY, FLORIDA — SHEET NUMBER 26

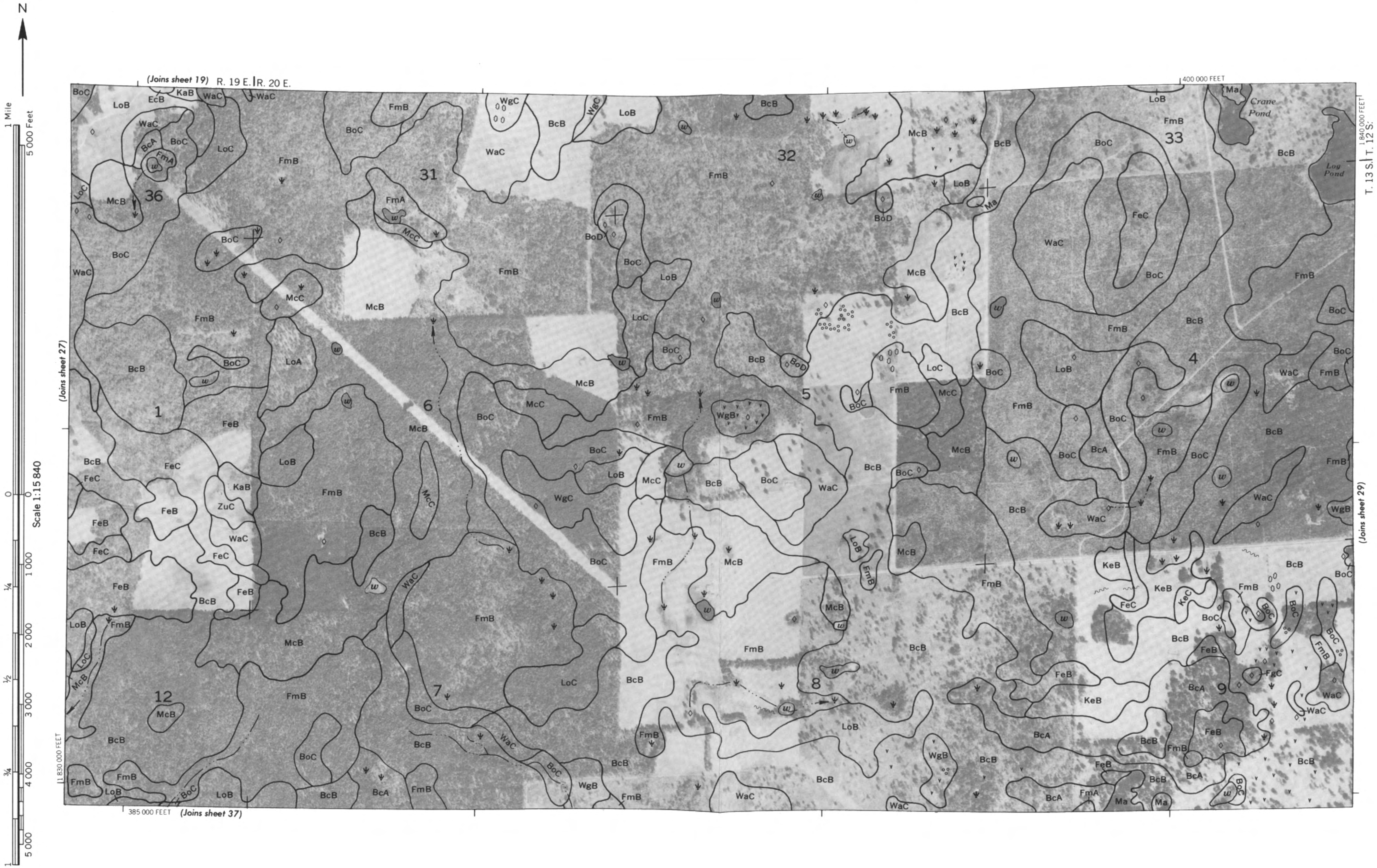

N
1 Mile
5 000 Feet
Scale 1:15 840
(Joins sheet 17)
R. 23 E.
R. 24 E.
530 000 FEET
1 850 000 FEET
T. 12 S.
(Joins sheet 25)
1 845 000 FEET
515 000 FEET
(Joins sheet 35)
25
30
36
31
32
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
PROPOSED CROSS FLORIDA BARGE CANAL
LAKE OCKLAWAHA
OCALA NATIONAL FOREST
Mill Creek

# MARION COUNTY, FLORIDA — SHEET NUMBER 27

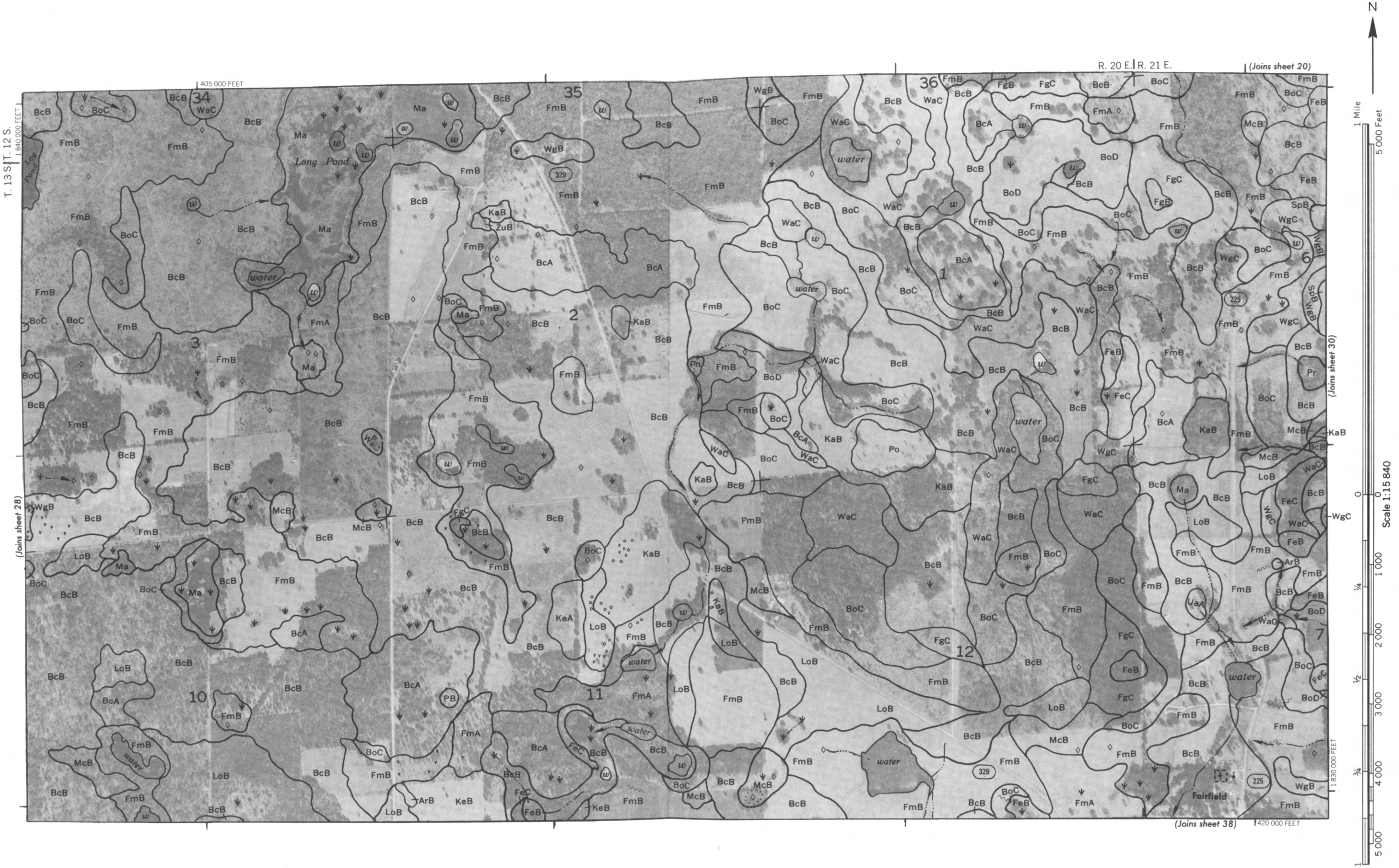


27
N
370 000 FEET
R. 19 E.
(Joins sheet 18)
(Joins sheet 28)
(Joins sheet 36)
380 000 FEET
1 835 000 FEET
1 830 000 FEET
T. 13 S. | T. 12 S.
LEVY COUNTY
34
35
36
3
2
1
10
11
12
318
335
water
Scale 1:15 840
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

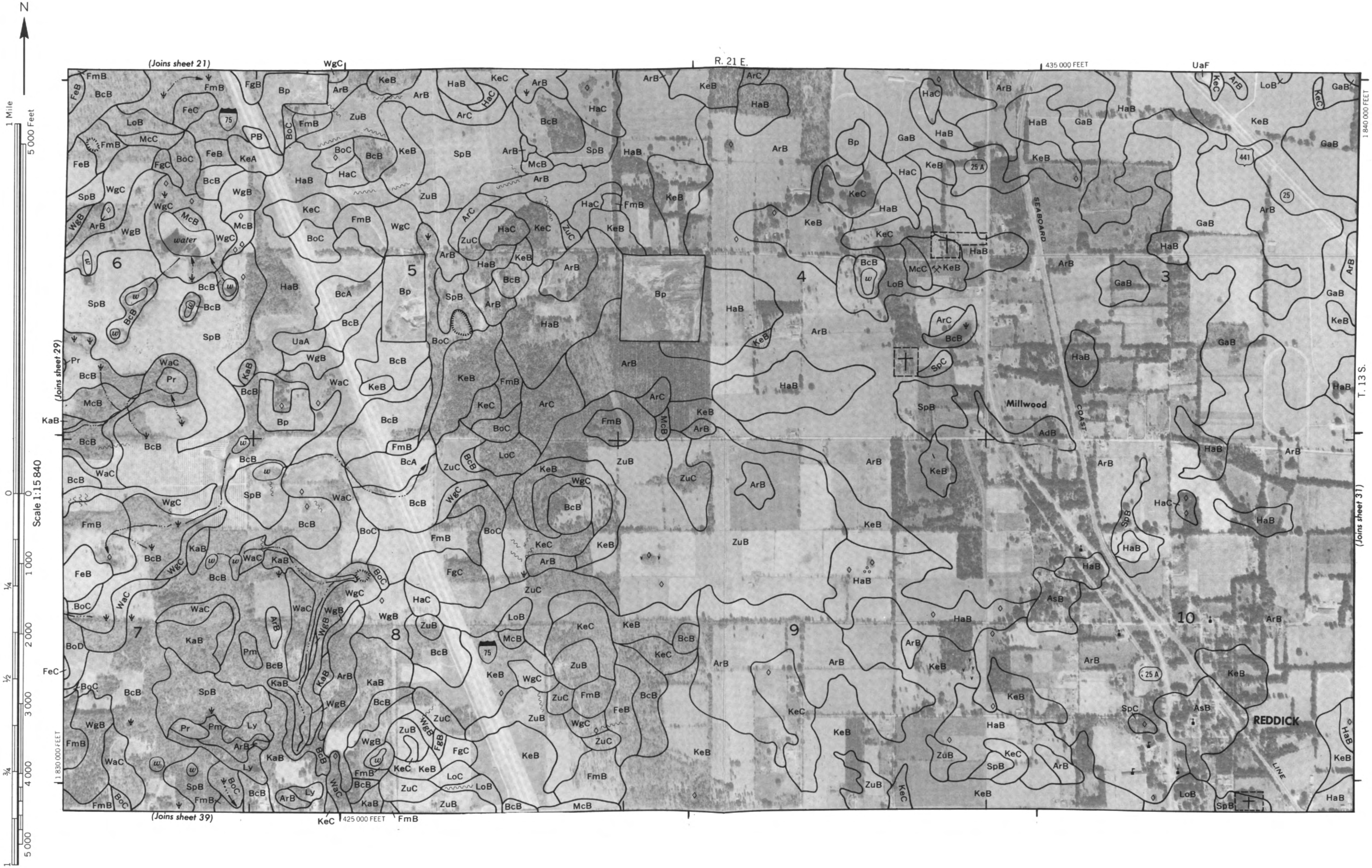
# MARION COUNTY, FLORIDA — SHEET NUMBER 28


N
(Joins sheet 19)
R. 19 E.
R. 20 E.
400 000 FEET
1 840 000 FEET
T. 13 S.
T. 12 S.
(Joins sheet 27)
(Joins sheet 29)
385 000 FEET
(Joins sheet 37)
1 830 000 FEET
Crane Pond
Log Pond
36
31
32
33
1
6
5
4
12
7
8
9
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
BoC
LoB
EcB
KaB
WaC
BcA
FmA
LoC
FmB
McB
WgC
McC
BoD
BcB
FeC
FeB
ZuC
LoA
WgB
KeB
KeC
Ma
w

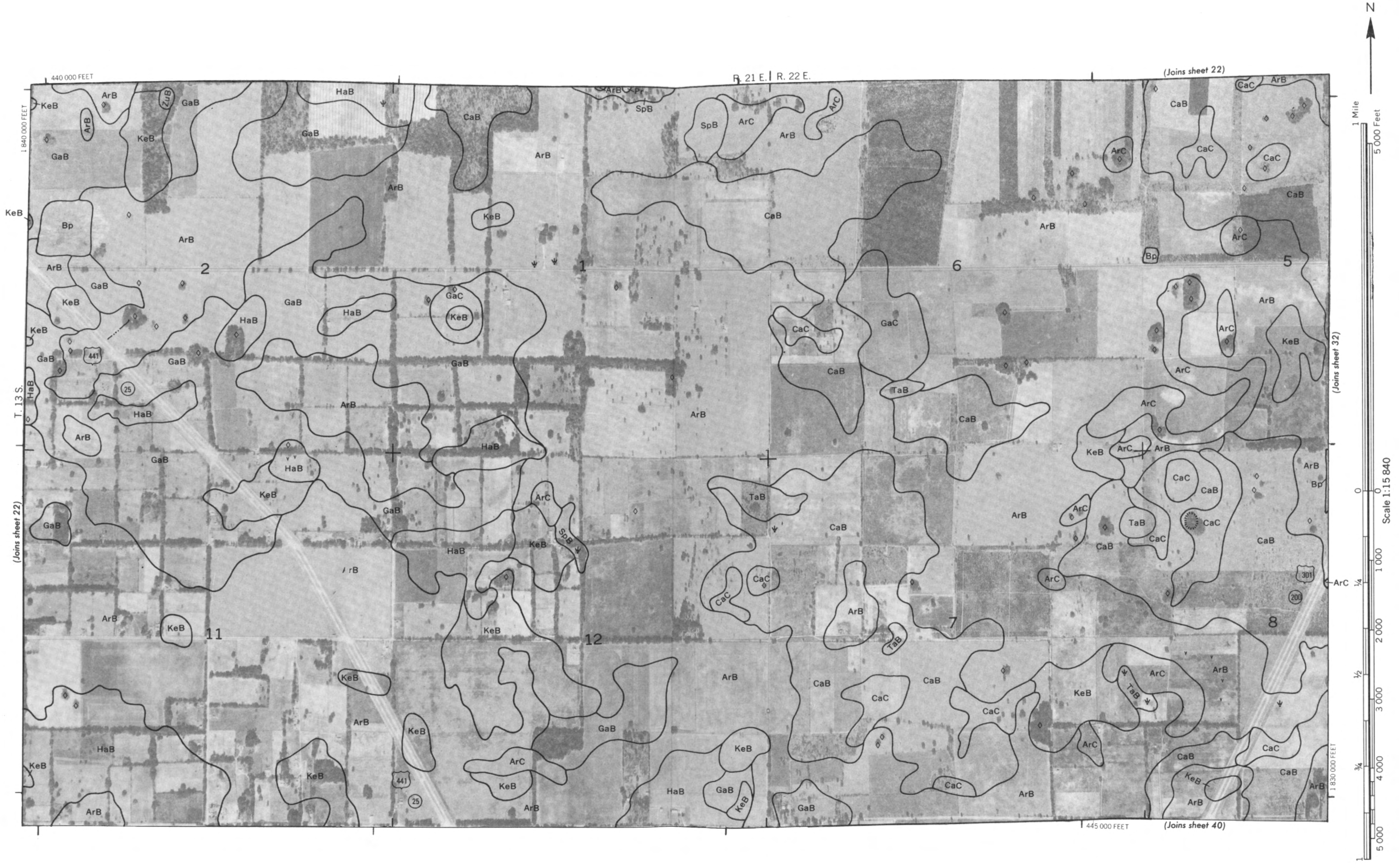
# MARION COUNTY, FLORIDA — SHEET NUMBER 29


N
R. 20 E.
R. 21 E.
(Joins sheet 20)
(Joins sheet 30)
(Joins sheet 38)
(Joins sheet 28)
T. 13 S.
T. 12 S.
405 000 FEET
420 000 FEET
1 840 000 FEET
1 830 000 FEET
Long Pond
Fairfield
water
329
225
34
35
36
1
2
3
6
7
10
11
12
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

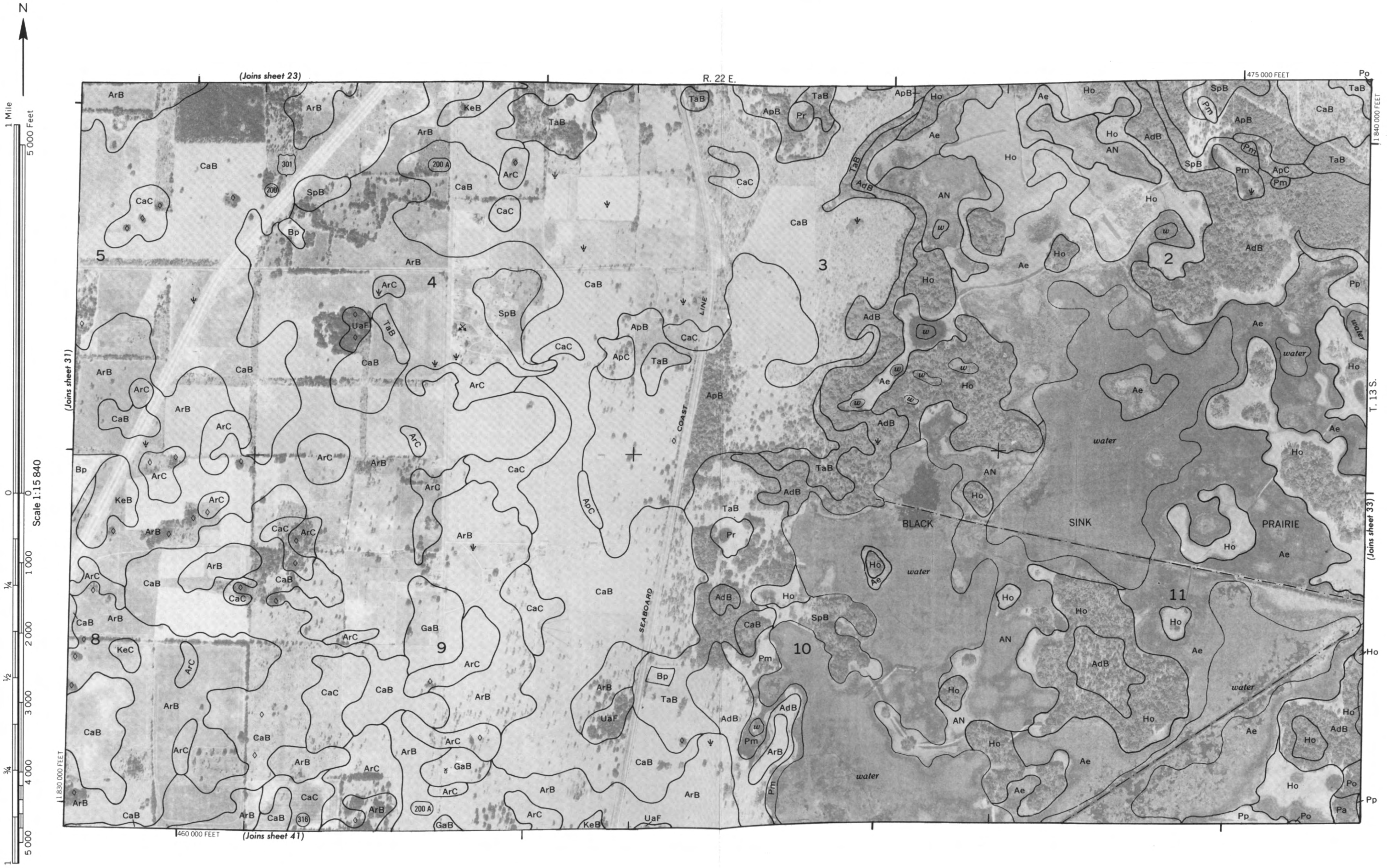
# MARION COUNTY, FLORIDA — SHEET NUMBER 30

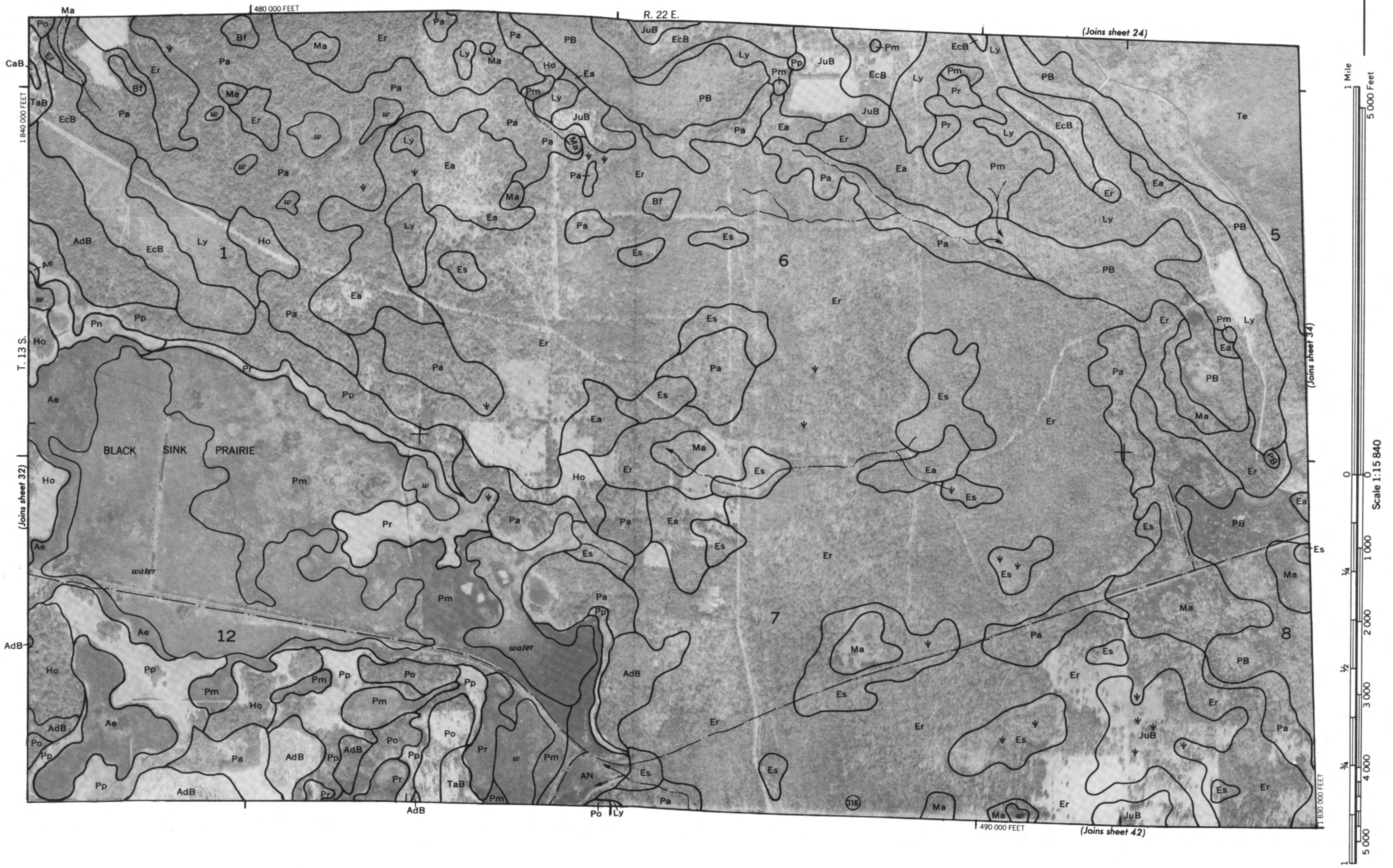

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 21)
R. 21 E.
435 000 FEET
1 840 000 FEET
T. 13 S.
(Joins sheet 29)
(Joins sheet 31)
(Joins sheet 39)
425 000 FEET
1 830 000 FEET
75
441
25
25 A
SEABOARD
COAST
LINE
Millwood
REDDICK
water
3
4
5
6
7
8
9
10

# MARION COUNTY, FLORIDA — SHEET NUMBER 31


N
440 000 FEET
R. 21 E.
R. 22 E.
(Joins sheet 22)
1 840 000 FEET
T. 13 S.
(Joins sheet 22)
(Joins sheet 32)
(Joins sheet 40)
445 000 FEET
1 830 000 FEET
KeB
ArB
ZuB
GaB
HaB
CaB
ArB
Pr
SpB
SpB
ArC
ArB
ArC
CaC
ArB
CaB
GaB
KeB
Bp
ArB
ArB
KeB
CaB
ArC
CaC
CaC
CaB
ArC
ArB
Bp
1
2
5
6
GaB
KeB
HaB
GaC
KeB
GaB
CaC
GaC
ArB
ArC
KeB
441
25
GaB
GaB
HaB
HaB
ArB
CaB
TaB
CaB
ArC
ArC
ArB
ArB
HaB
HaB
KeB
ArC
ArB
CaC
CaB
ArB
Bp
KeB
TaB
ArB
ArC
TaB
CaC
CaC
GaB
GaB
KeB
GaB
SpB
KeB
CaB
CaB
CaB
301
200
ArC
HaB
ArB
CaC
CaC
ArB
ArC
ArB
KeB
11
12
TaB
7
8
KeB
ArB
CaB
CaB
CaC
KeB
ArC
TaB
ArB
ArB
CaC
HaB
KeB
KeB
GaB
CaC
ArC
CaB
CaC
441
KeB
ArC
25
KeB
HaB
GaB
KeB
GaB
CaC
ArB
KeB
ArB
ArB
ArB
ArB
1 Mile
5 000 Feet
0
0
1000
¼
2000
½
3000
¾
4000
1
5 000
Scale 1:15 840

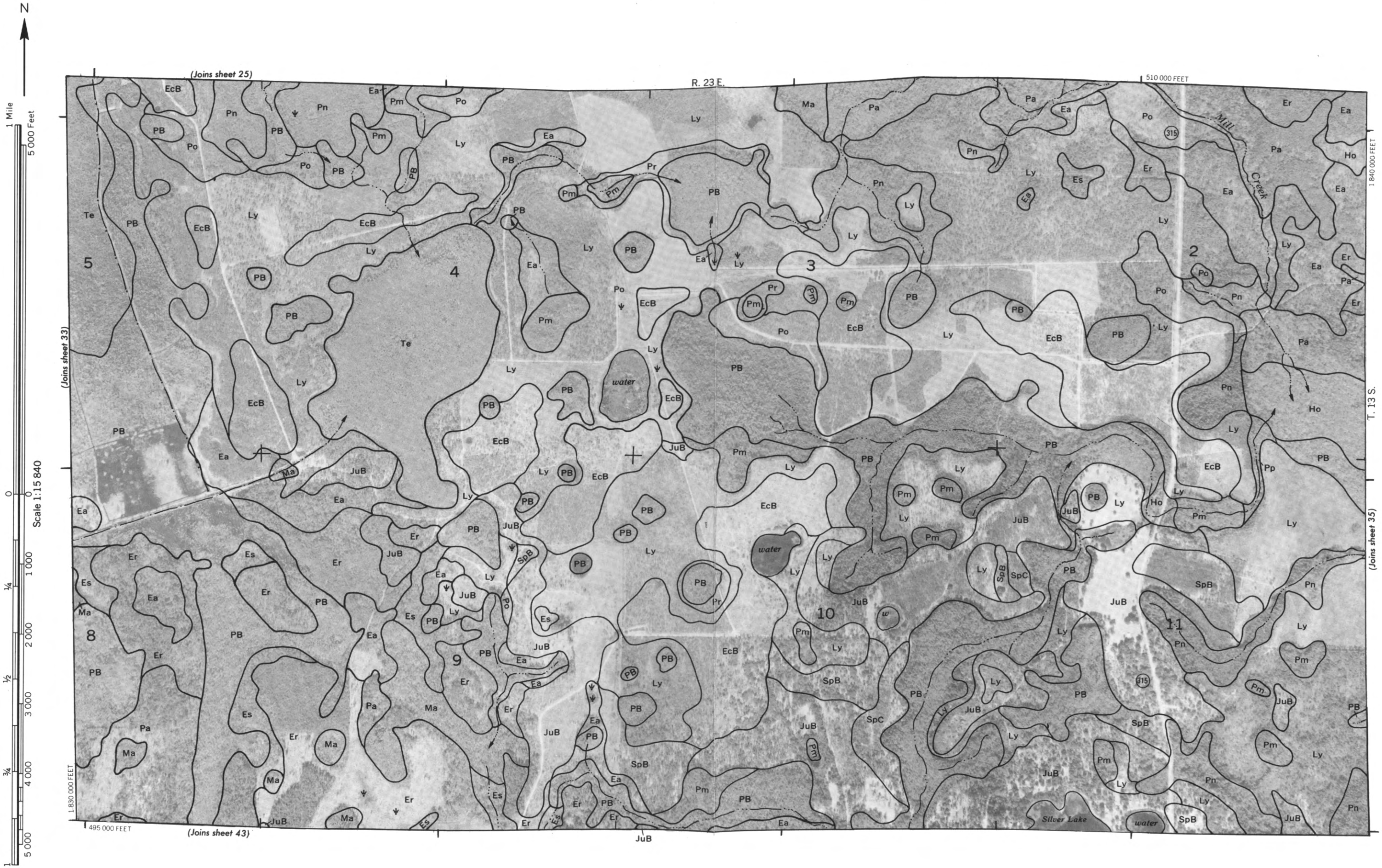
MARION COUNTY, FLORIDA — SHEET NUMBER 32


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
(Joins sheet 23)
(Joins sheet 31)
(Joins sheet 33)
(Joins sheet 41)
R. 22 E.
T. 13 S.
475 000 FEET
1 840 000 FEET
460 000 FEET
1 830 000 FEET
SEABOARD COAST LINE
BLACK SINK PRAIRIE
water
301
200
200 A
316
1
2
3
4
5
8
9
10
11
ArB
ArC
CaB
CaC
SpB
Bp
KeB
KeC
TaB
UaF
ApB
ApC
GaB
Pr
AdB
Ae
AN
Ho
Pm
Pp
Po
Pa
w

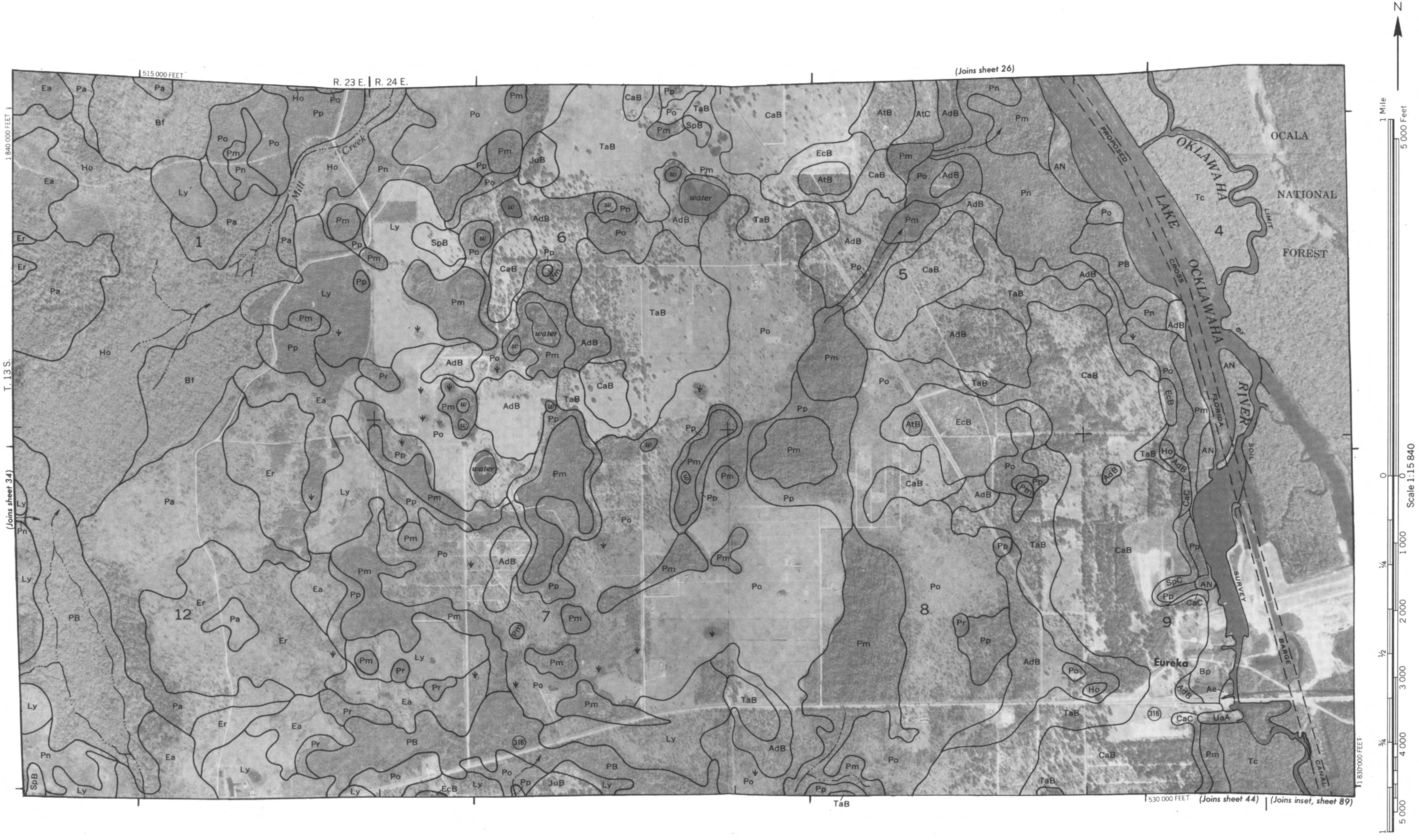

N
(Joins sheet 24)
(Joins sheet 34)
(Joins sheet 32)
(Joins sheet 42)
R. 22 E.
T. 13 S.
480 000 FEET
490 000 FEET
1 840 000 FEET
1 830 000 FEET
BLACK SINK PRAIRIE
water
1
5
6
7
8
12
316
Ma
CaB
TaB
EcB
AdB
Ae
Pn
Pp
Po
Ho
Pr
Pm
Pa
Er
Bf
w
Ly
Ea
Es
PB
JuB
EcB
Te
AN
Scale 1:15 840
1 Mile
5 000 Feet
0
¼
½
¾
1 000
2 000
3 000
4 000
5 000

(34)

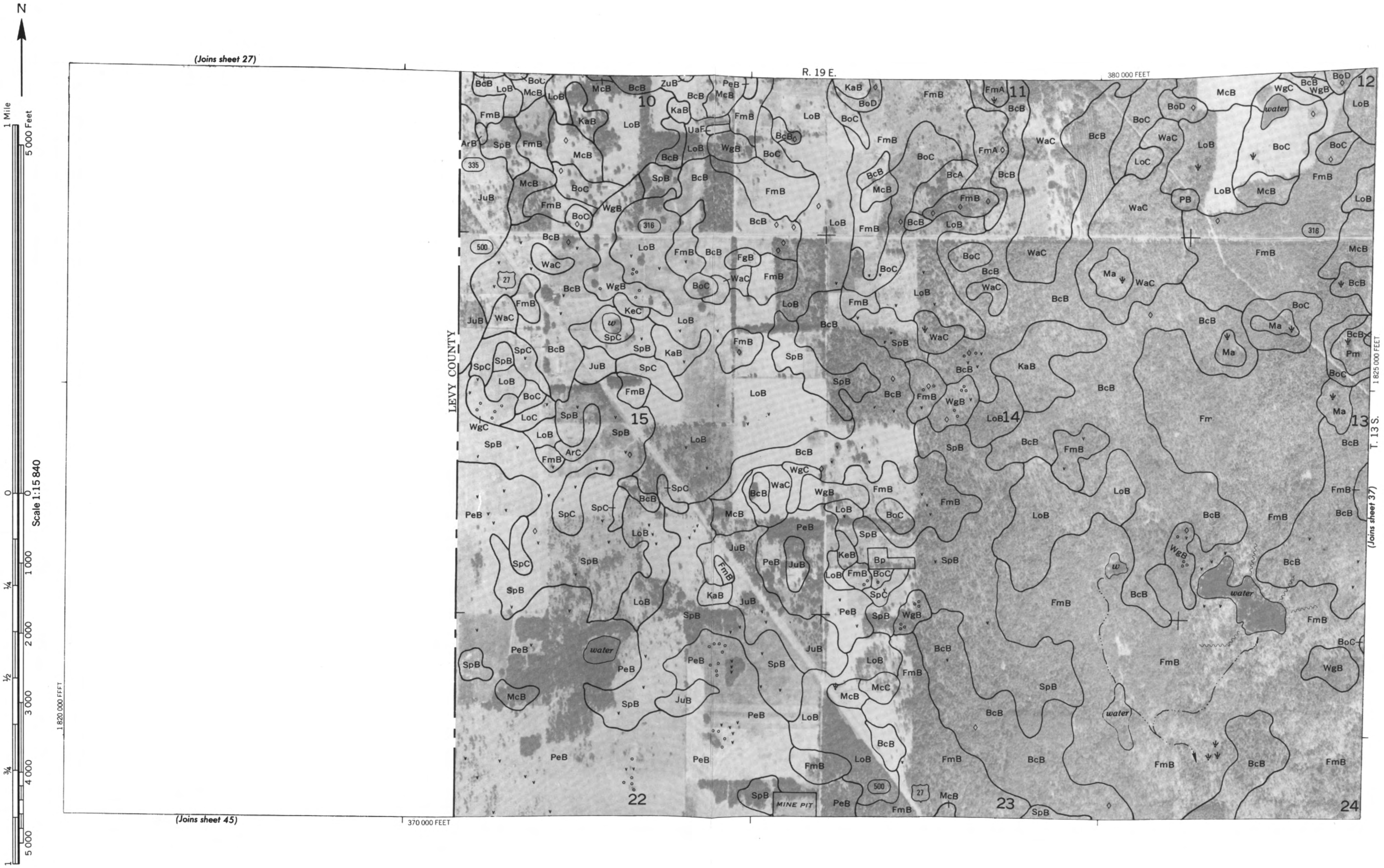
# MARION COUNTY, FLORIDA — SHEET NUMBER 34


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 25)
R. 23 E.
510 000 FEET
1 840 000 FEET
T. 13 S.
(Joins sheet 35)
(Joins sheet 33)
(Joins sheet 43)
1 830 000 FEET
495 000 FEET
Mill Creek
Silver Lake
water
315
2
3
4
5
8
9
10
11
EcB
Ea
Er
Es
Ho
JuB
Ly
Ma
Pa
PB
Pm
Pn
Po
Pp
Pr
SpB
SpC
Te
w

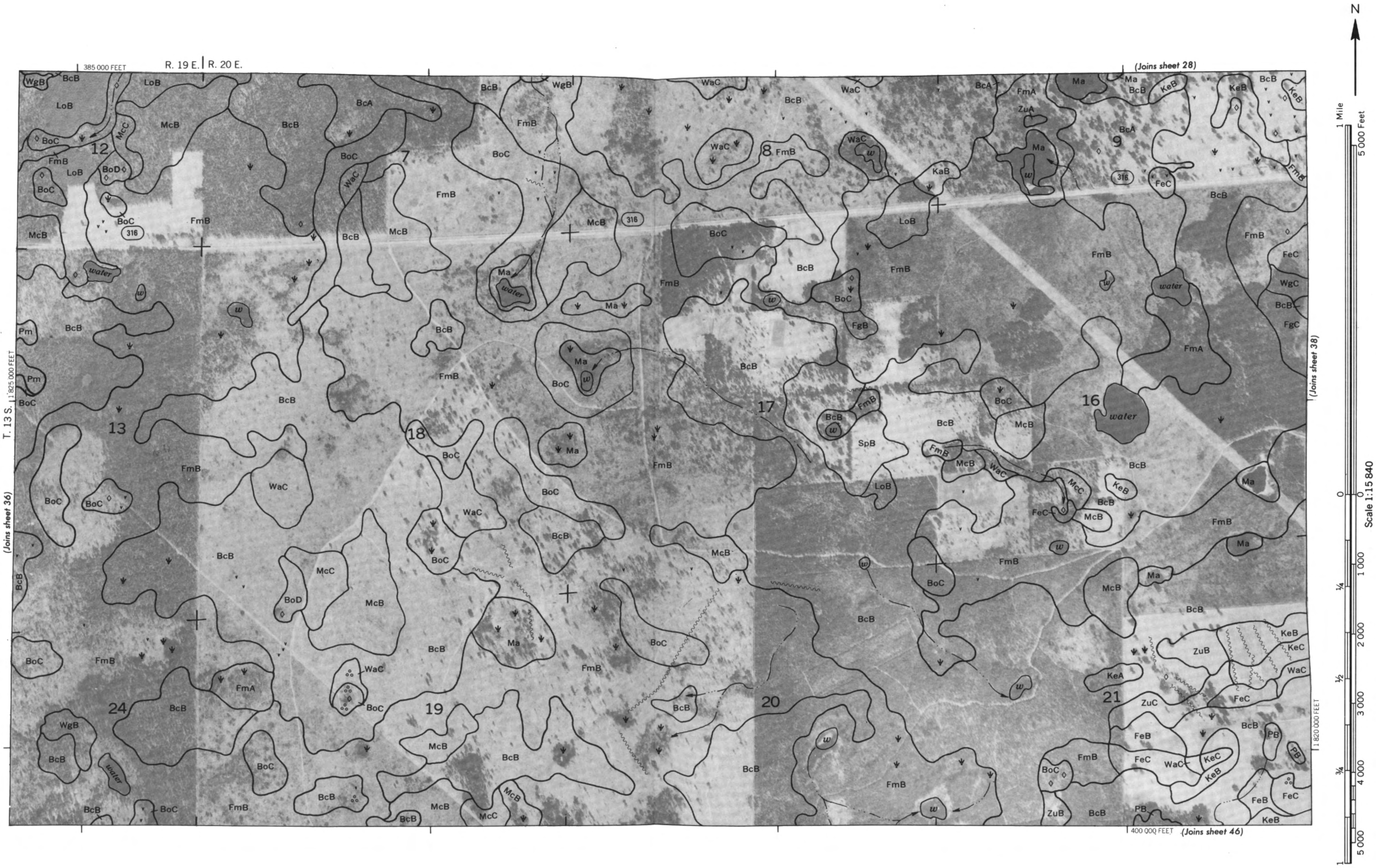
# MARION COUNTY, FLORIDA — SHEET NUMBER 35


N
(Joins sheet 26)
515 000 FEET
R. 23 E. | R. 24 E.
1 840 000 FEET
T. 13 S.
(Joins sheet 34)
Mill Creek
OKLAWAHA
OCKLAWAHA RIVER
LAKE
PROPOSED CROSS FLORIDA BARGE CANAL
OCALA NATIONAL FOREST
LIMIT OF SOIL SURVEY
water
Eureka
316
1
4
5
6
7
8
9
12
530 000 FEET
(Joins sheet 44)
(Joins inset, sheet 89)
1 830 000 FEET
TaB
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

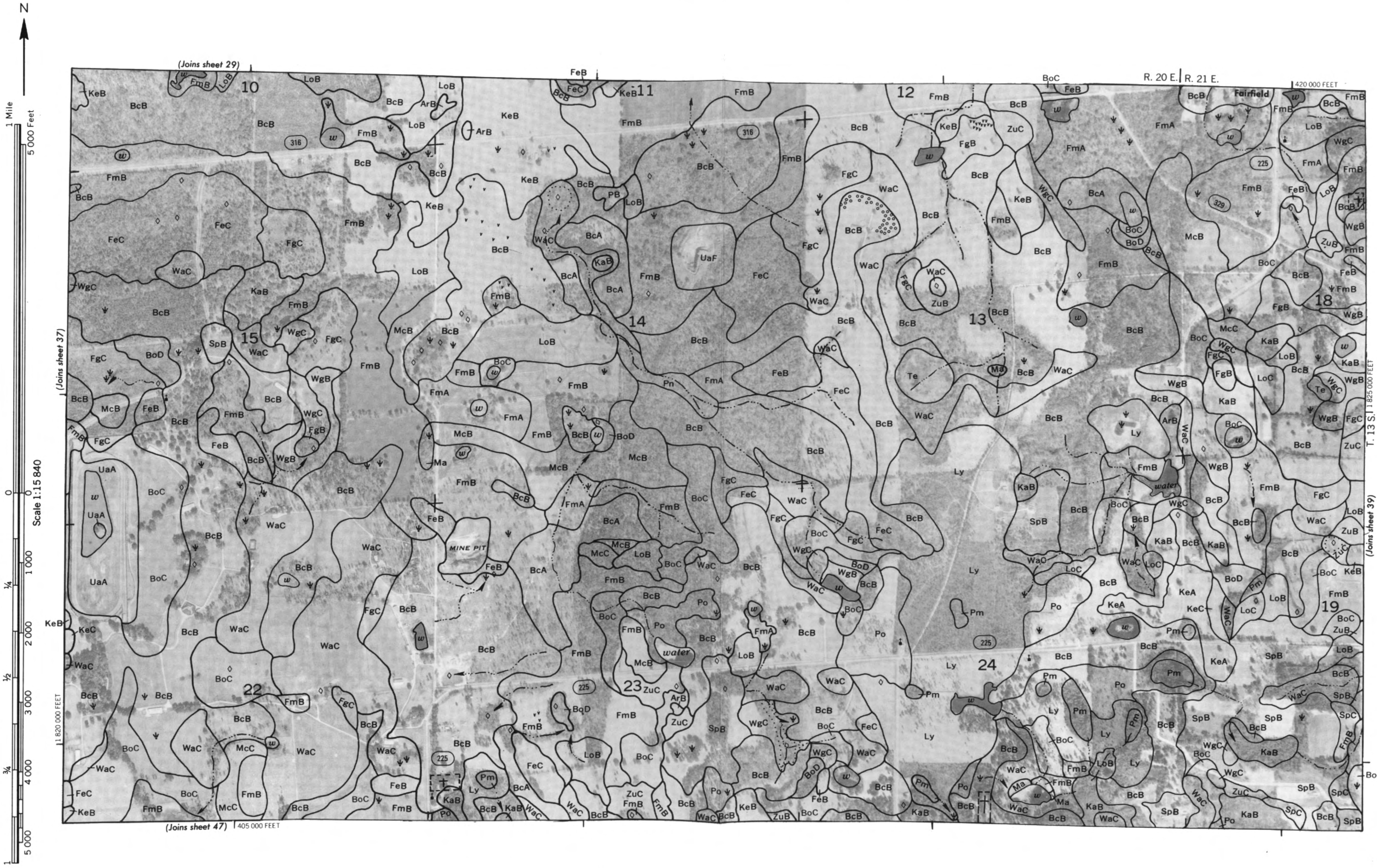
# MARION COUNTY, FLORIDA — SHEET NUMBER 36

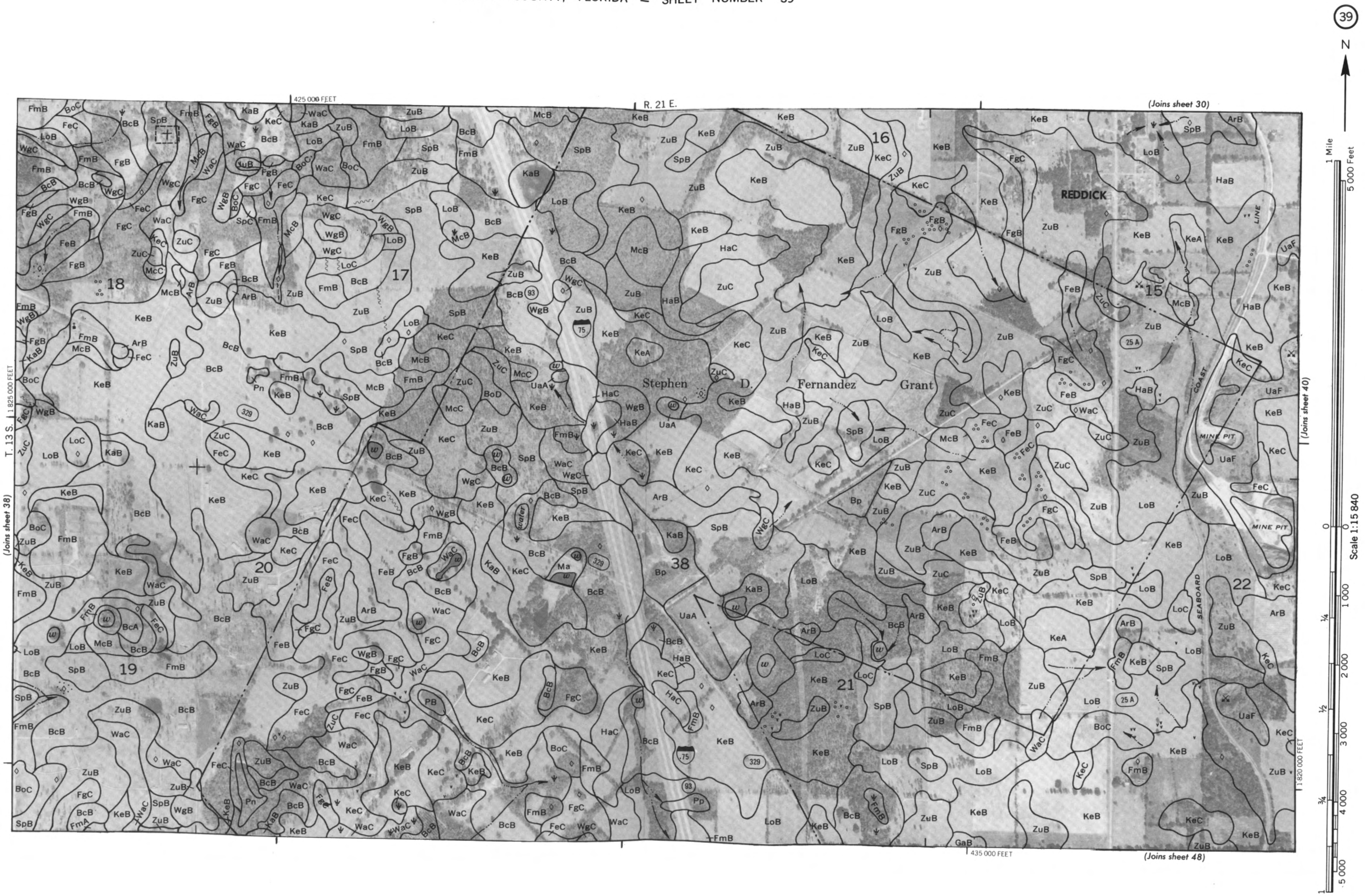

36
N
(Joins sheet 27)
(Joins sheet 45)
(Joins sheet 37)
R. 19 E.
T. 13 S.
380 000 FEET
370 000 FEET
1 825 000 FEET
1 820 000 FEET
LEVY COUNTY
Scale 1:15 840
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
10
11
12
13
14
15
22
23
24
316
335
500
27
water
MINE PIT

# MARION COUNTY, FLORIDA — SHEET NUMBER 37

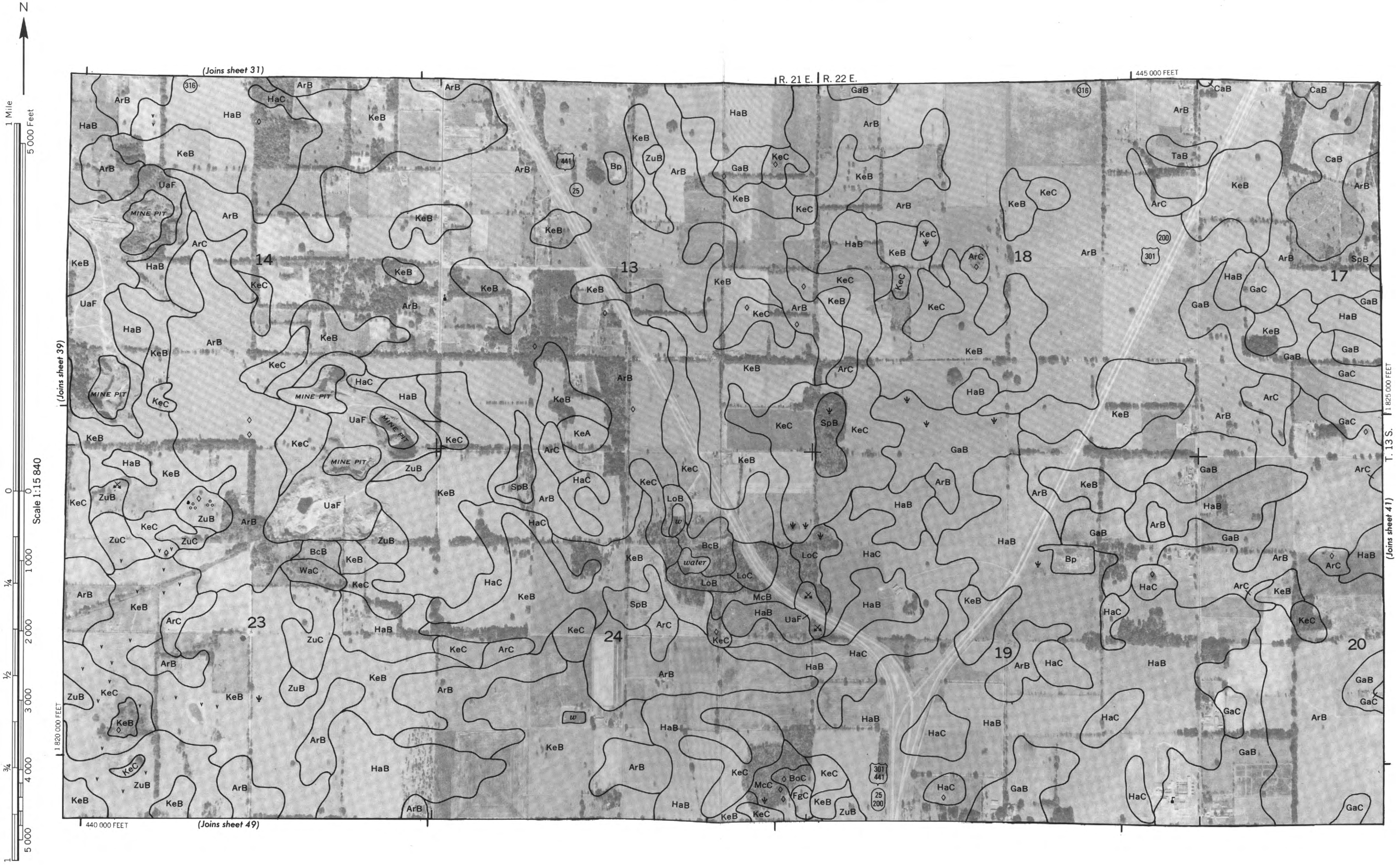

N
385 000 FEET
R. 19 E.
R. 20 E.
(Joins sheet 28)
(Joins sheet 36)
(Joins sheet 38)
(Joins sheet 46)
400 000 FEET
T. 13 S.
1 825 000 FEET
1 820 000 FEET
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
1000
2000
3000
4000
5000
Scale 1:15 840
316
7
8
9
12
13
16
17
18
19
20
21
24
water
w
WgB
BcB
LoB
McC
McB
BcA
BoC
BoD
FmB
WaC
Ma
FmA
ZuA
KeB
KaB
FeC
LoB
FgB
SpB
FgC
WgC
Pm
McB
ZuB
KeC
KeA
ZuC
FeB
PB
BcB
McC

# MARION COUNTY, FLORIDA — SHEET NUMBER 38

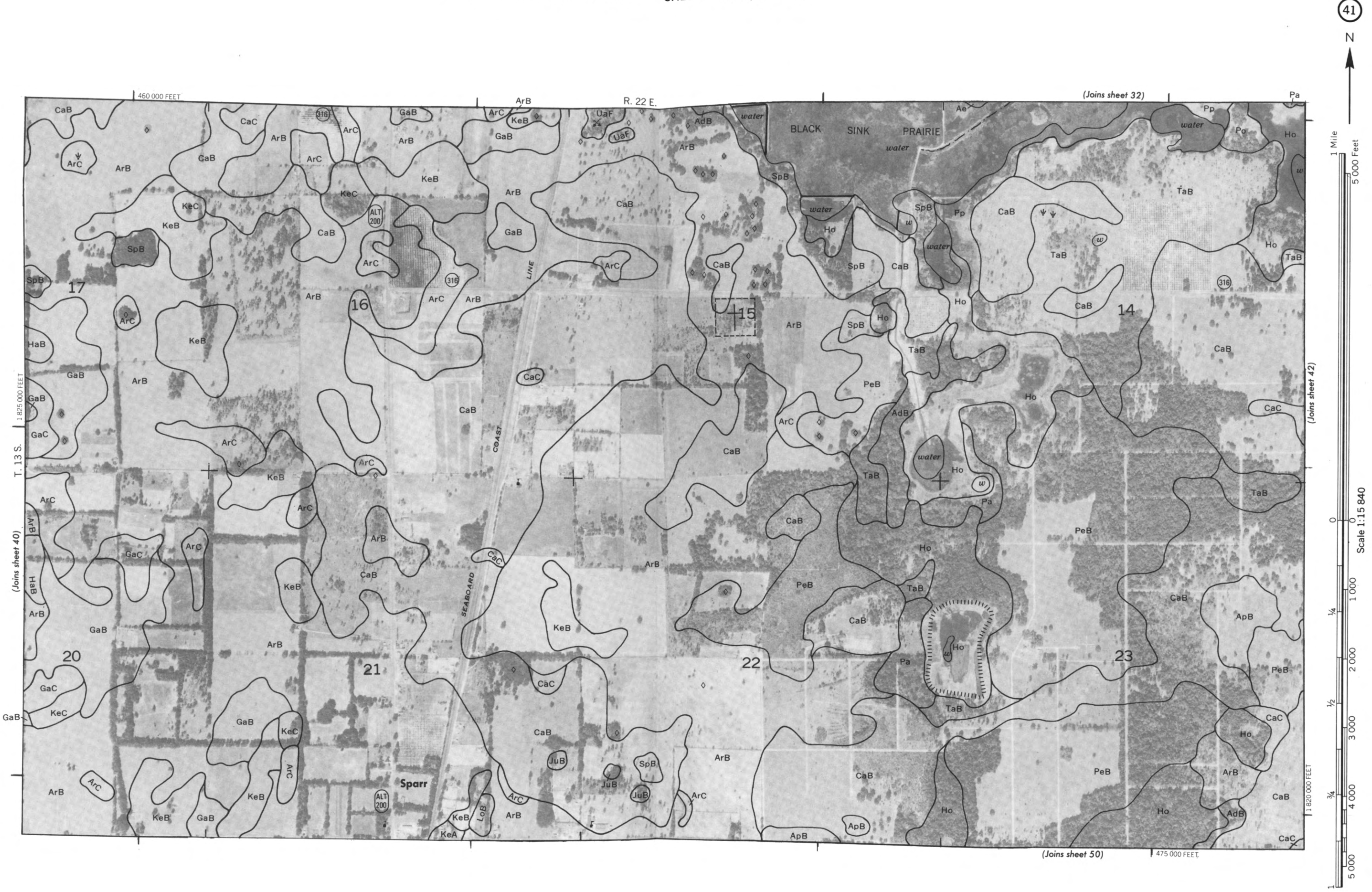

N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
(Joins sheet 29)
(Joins sheet 37)
(Joins sheet 39)
(Joins sheet 47)
R. 20 E.
R. 21 E.
T. 13 S.
420 000 FEET
1 825 000 FEET
405 000 FEET
1 820 000 FEET
Fairfield
MINE PIT
water
316
225
329
10
11
12
13
14
15
18
19
22
23
24


39
N
R. 21 E.
T. 13 S.
425 000 FEET
435 000 FEET
1 825 000 FEET
1 820 000 FEET
(Joins sheet 30)
(Joins sheet 38)
(Joins sheet 40)
(Joins sheet 48)
REDDICK
Stephen D. Fernandez Grant
MINE PIT
SEABOARD COAST LINE
1 Mile
5 000 Feet
Scale 1:15 840

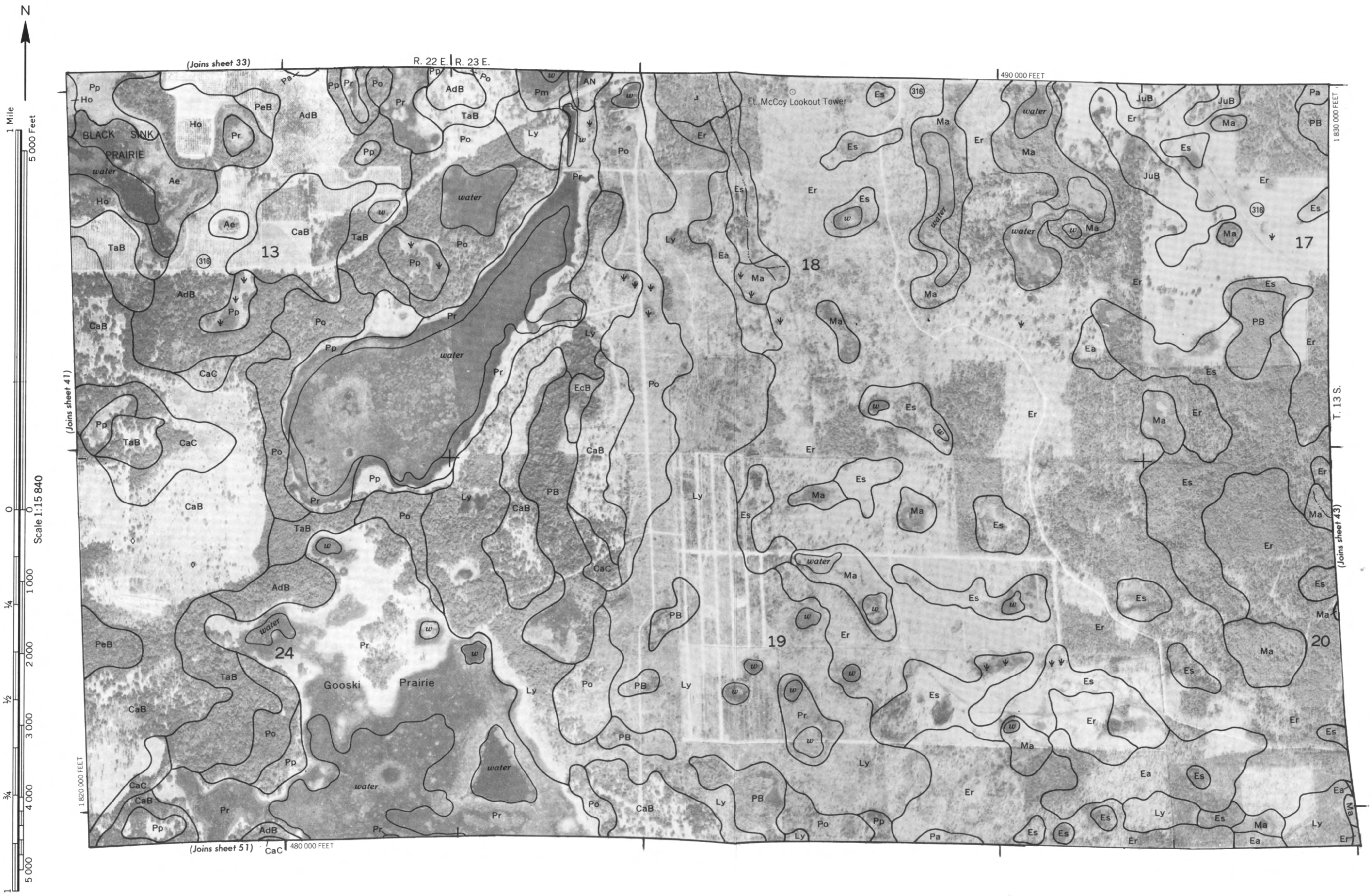
MARION COUNTY, FLORIDA — SHEET NUMBER 40


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
(Joins sheet 31)
(Joins sheet 39)
(Joins sheet 41)
(Joins sheet 49)
R. 21 E.
R. 22 E.
T. 13 S.
445 000 FEET
440 000 FEET
1 825 000 FEET
1 820 000 FEET
316
441
25
200
301
13
14
17
18
19
20
23
24
MINE PIT
water
w
ArB
ArC
BcB
BoC
Bp
CaB
FgC
GaB
GaC
HaB
HaC
KeA
KeB
KeC
LoB
LoC
McB
McC
SpB
TaB
UaF
WaC
ZuB
ZuC

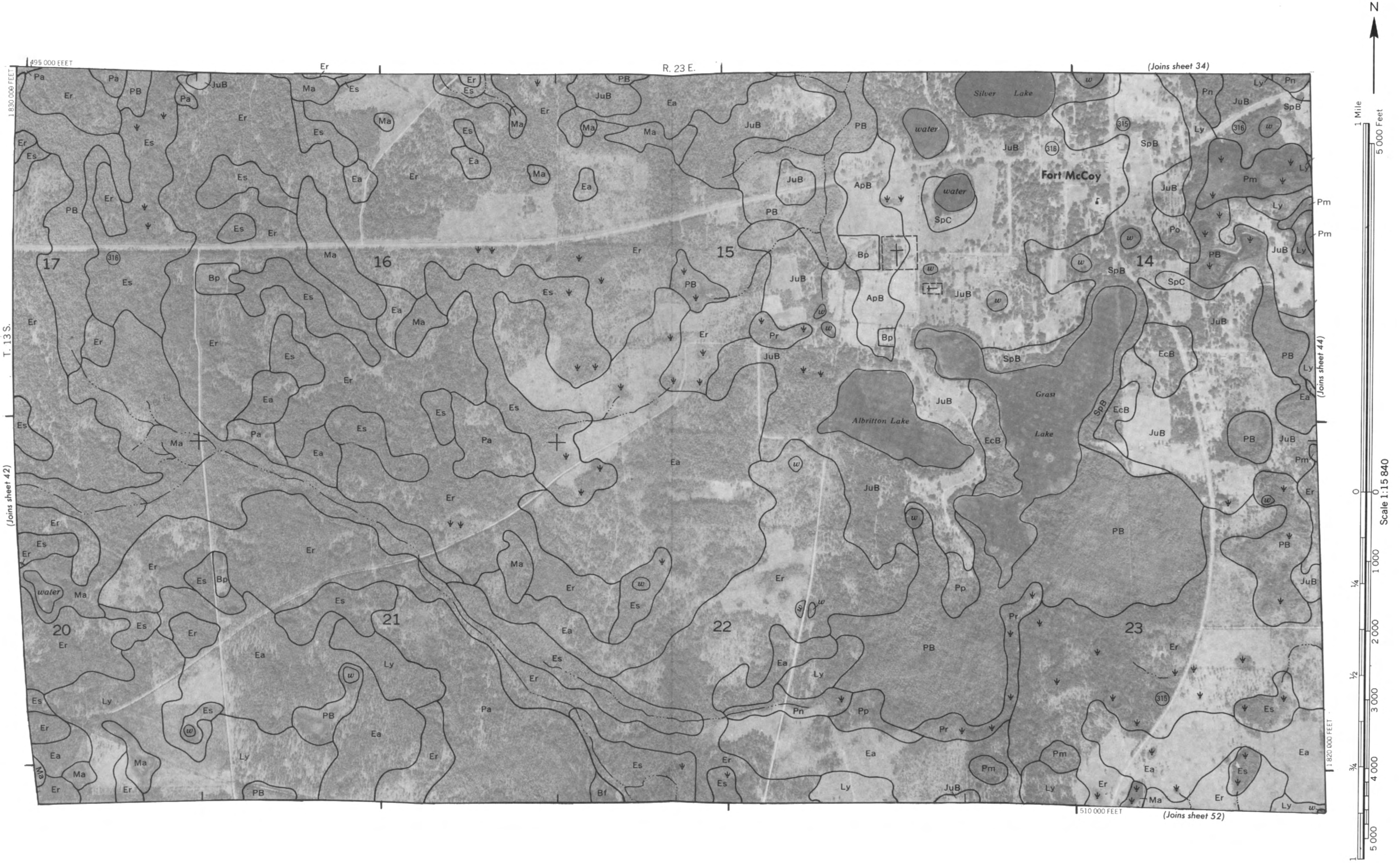
MARION COUNTY, FLORIDA — SHEET NUMBER 41

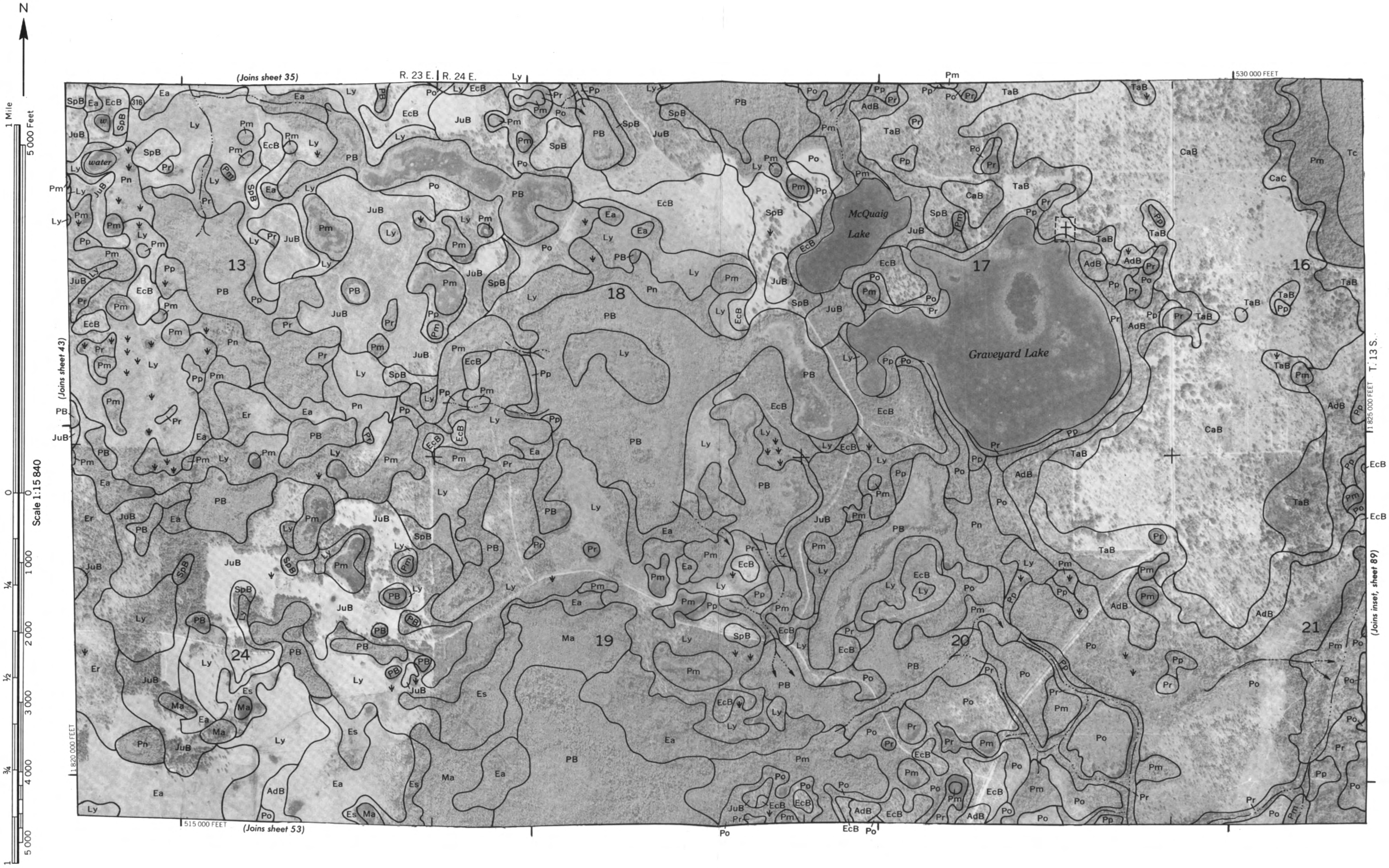

41
N
460 000 FEET
R. 22 E.
(Joins sheet 32)
BLACK SINK PRAIRIE
water
1 825 000 FEET
T. 13 S.
(Joins sheet 40)
(Joins sheet 42)
(Joins sheet 50)
475 000 FEET
1 820 000 FEET
SEABOARD
COAST
LINE
Sparr
ALT 200
316
14
15
16
17
20
21
22
23
ArB
ArC
CaB
CaC
KeB
KeC
KeA
GaB
GaC
SpB
HaB
UaF
AdB
TaB
Ho
Pa
Pp
Po
Ae
PeB
ApB
JuB
LoB
w
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1

# MARION COUNTY, FLORIDA — SHEET NUMBER 42

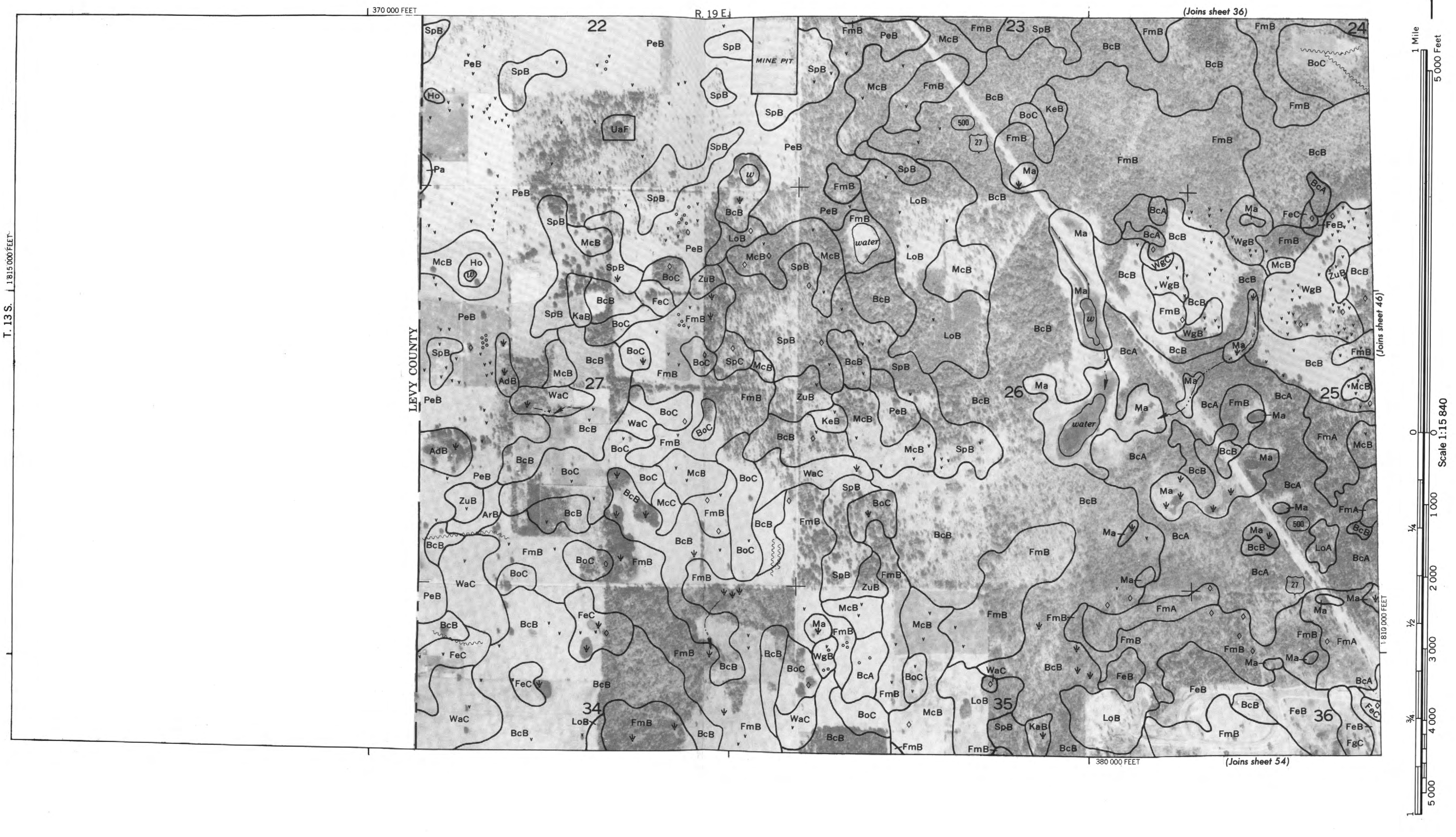

N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 33)
R. 22 E.
R. 23 E.
490 000 FEET
1 830 000 FEET
(Joins sheet 41)
(Joins sheet 43)
T. 13 S.
1 820 000 FEET
(Joins sheet 51)
480 000 FEET
BLACK SINK PRAIRIE
Gooski Prairie
Ft. McCoy Lookout Tower
316
13
17
18
19
20
24
water
w
Pp
Ho
Pa
PeB
AdB
Pr
Po
TaB
Pm
AN
Ly
Ae
CaB
CaC
EcB
PB
Er
Es
Ea
Ma
JuB

# MARION COUNTY, FLORIDA — SHEET NUMBER 43

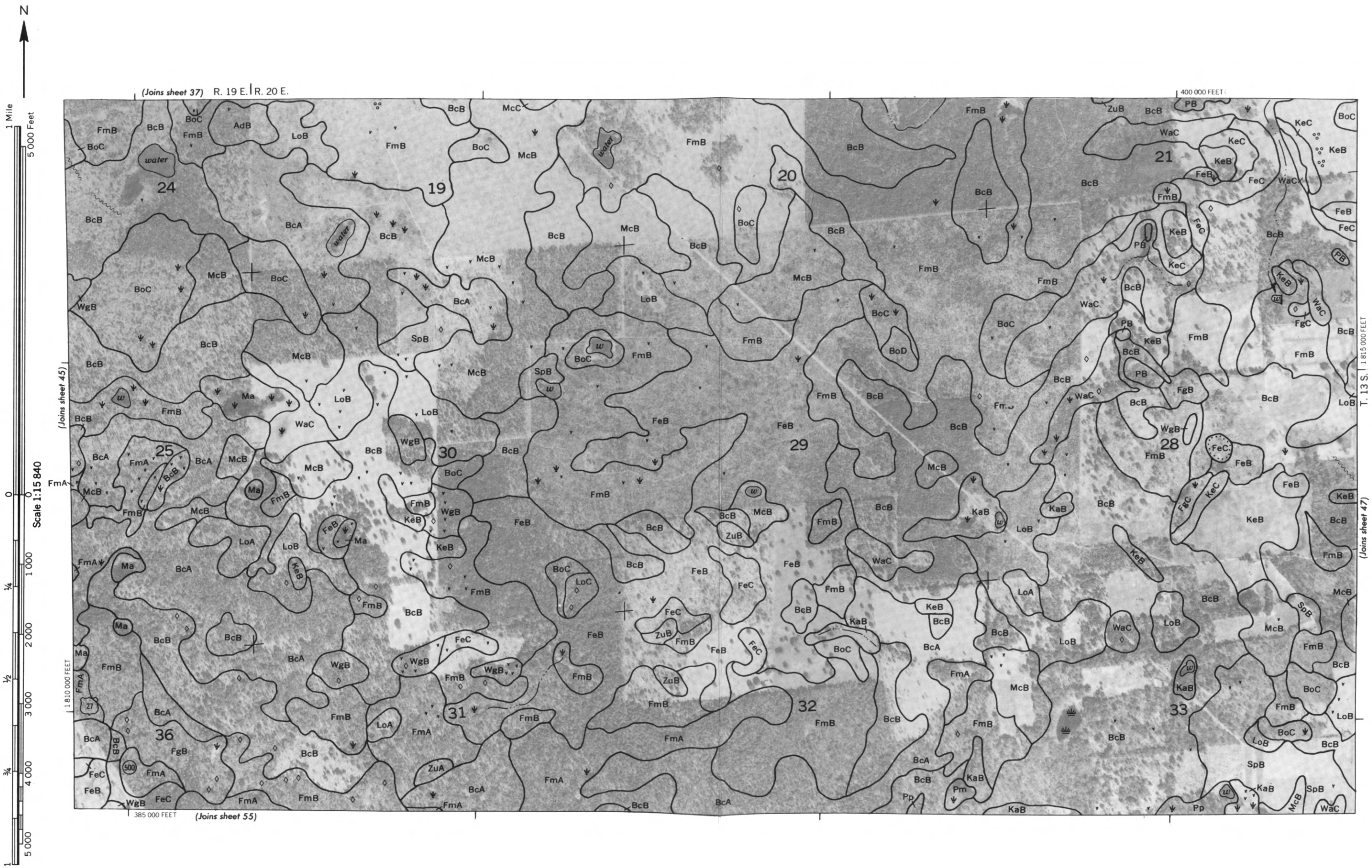

N
(Joins sheet 34)
(Joins sheet 42)
(Joins sheet 44)
(Joins sheet 52)
R. 23 E.
T. 13 S.
495 000 FEET
1 830 000 FEET
510 000 FEET
1 820 000 FEET
Silver Lake
Fort McCoy
Albritton Lake
Grass Lake
water
14
15
16
17
20
21
22
23
315
316
318
Er
Es
Ea
Ma
Pa
PB
JuB
ApB
Bp
Bf
SpB
SpC
EcB
Pm
Pn
Pp
Pr
Po
Ly
w
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 35)
(Joins sheet 43)
(Joins sheet 53)
(Joins inset, sheet 89)
R. 23 E.
R. 24 E.
T. 13 S.
530 000 FEET
515 000 FEET
1 825 000 FEET
1 820 000 FEET
316
13
16
17
18
19
20
21
24
McQuaig Lake
Graveyard Lake
water
w
PB
JuB
Ly
Po
Pm
Pr
Pp
Pn
EcB
SpB
Ea
Er
Es
Ma
AdB
TaB
CaB
CaC
Tc

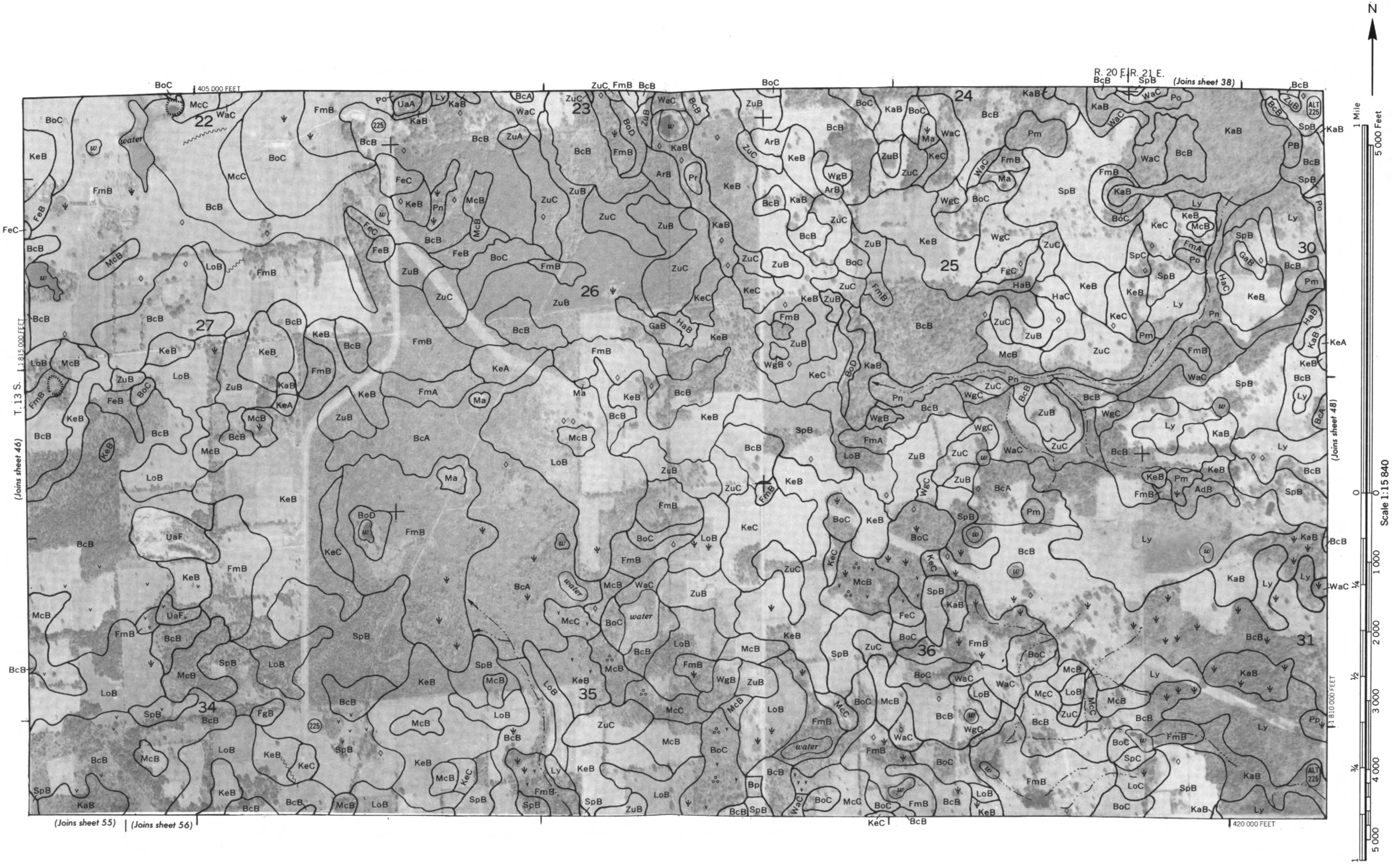
# MARION COUNTY, FLORIDA — SHEET NUMBER 45


N
370 000 FEET
R. 19 E.
(Joins sheet 36)
1 815 000 FEET
T. 13 S.
LEVY COUNTY
(Joins sheet 46)
1 810 000 FEET
380 000 FEET
(Joins sheet 54)
22
23
24
25
26
27
34
35
36
MINE PIT
water
500
27
1 Mile
5 000 Feet
0
¼
½
¾
1
0
1000
2000
3000
4000
5 000
Scale 1:15 840

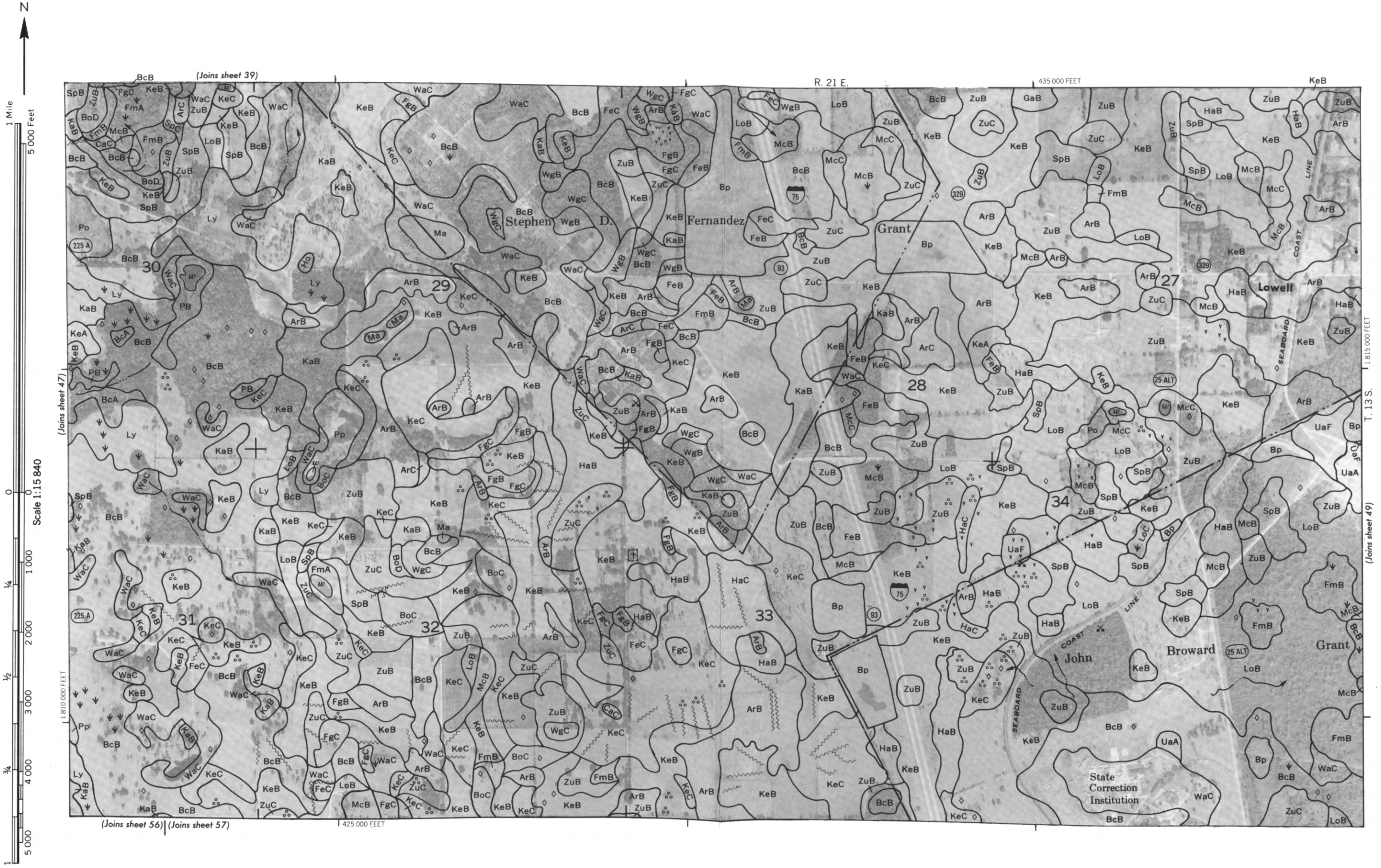
MARION COUNTY, FLORIDA — SHEET NUMBER 46


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 37)
R. 19 E.
R. 20 E.
400 000 FEET
(Joins sheet 45)
(Joins sheet 47)
1 815 000 FEET
T. 13 S.
1 810 000 FEET
385 000 FEET
(Joins sheet 55)
24
19
20
21
25
30
29
28
36
31
32
33
water
water
water
27
500
FmB
BcB
BoC
AdB
LoB
McC
McB
BcA
McB
BoC
WgB
LoB
SpB
Ma
WaC
FmA
KeB
LoA
FeB
FeC
LoC
ZuB
ZuA
FgB
WgB
BoD
KaB
KeC
PB
FgC
Pm
Pp
SpB
w

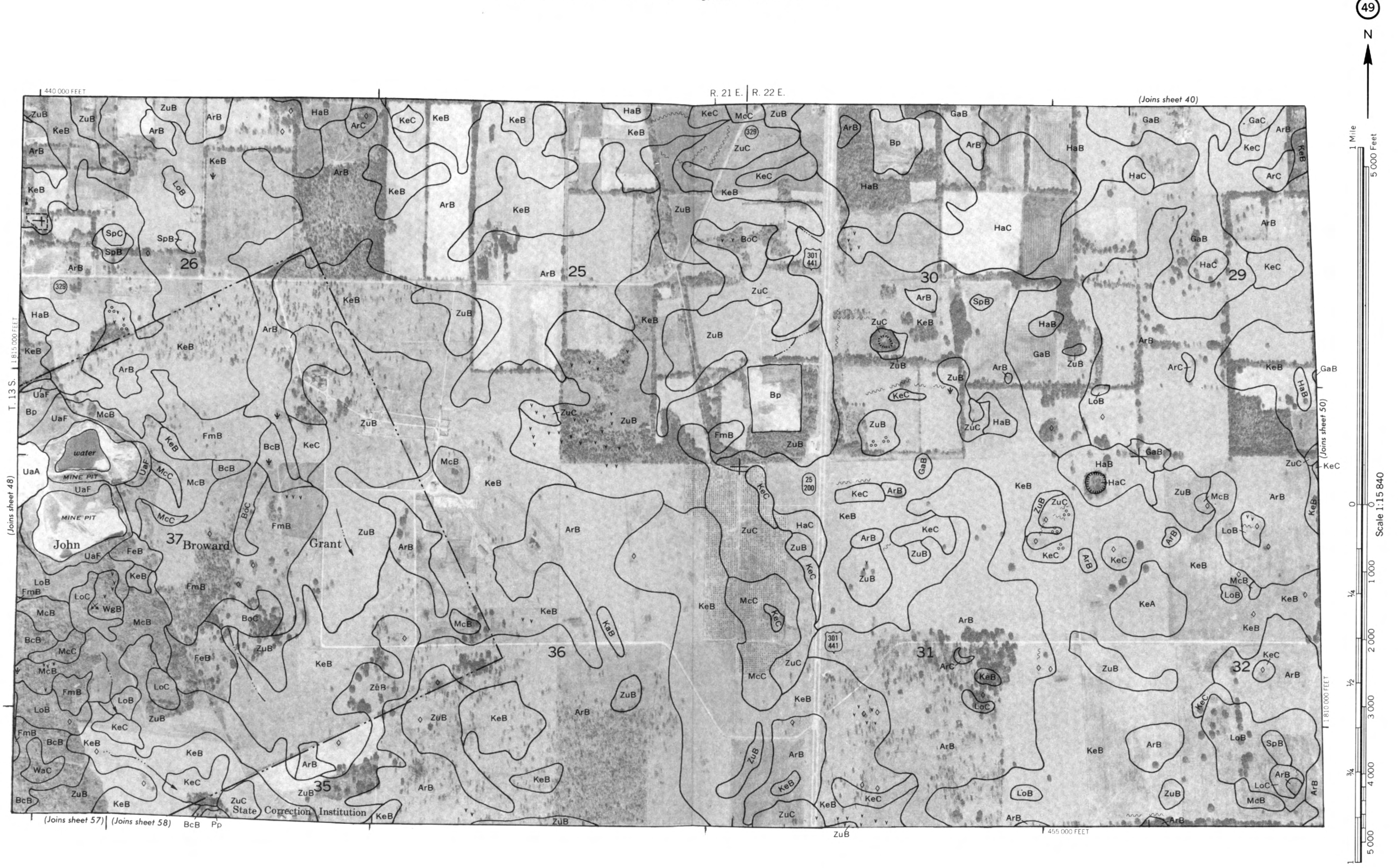
## MARION COUNTY, FLORIDA — SHEET NUMBER 47


N
R. 20 E. | R. 21 E.
(Joins sheet 38)
405 000 FEET
T. 13 S.
1 815 000 FEET
(Joins sheet 46)
(Joins sheet 48)
1 810 000 FEET
(Joins sheet 55)
(Joins sheet 56)
420 000 FEET
22
23
24
25
26
27
30
31
34
35
36
225
ALT 225
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000

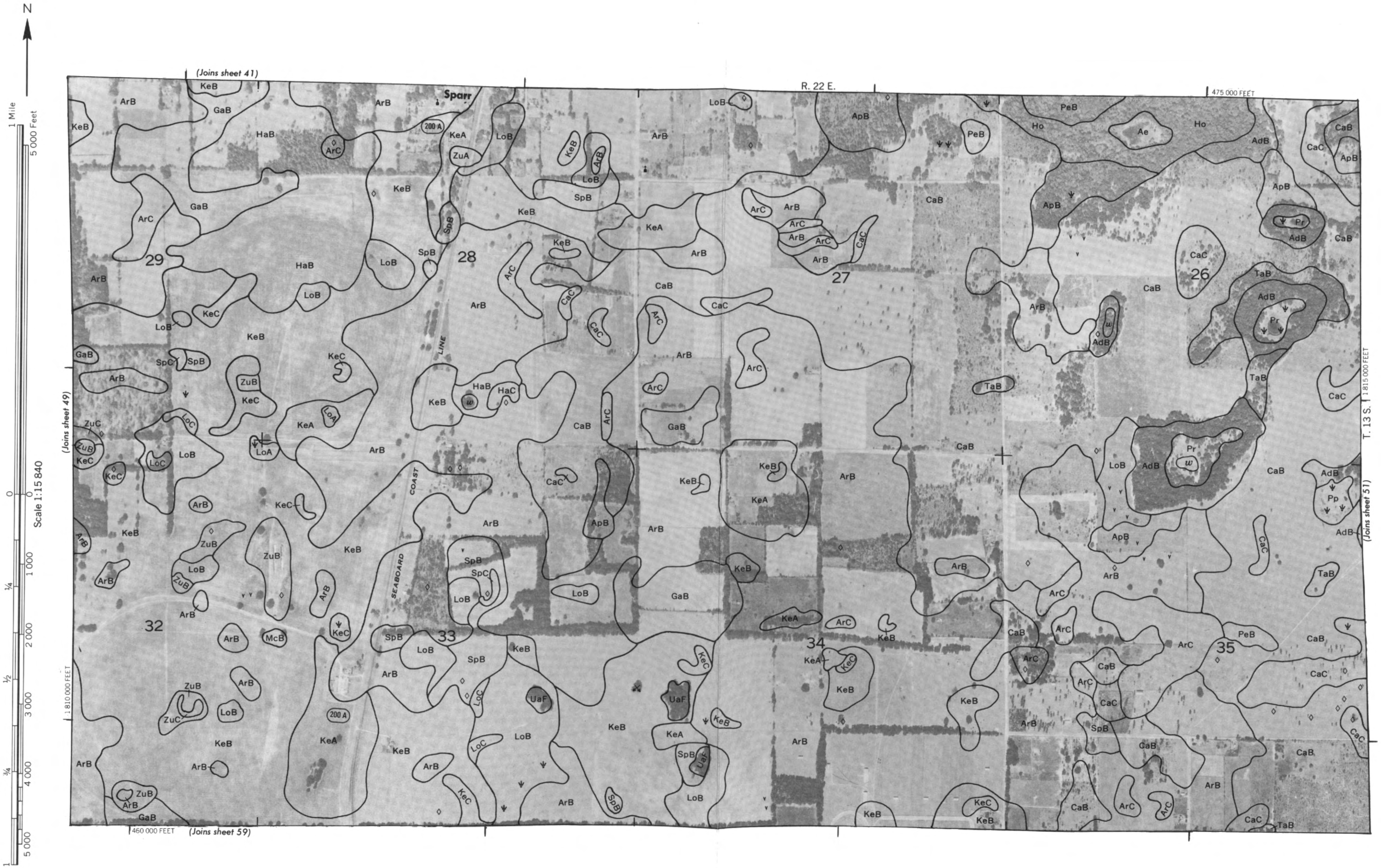
# MARION COUNTY, FLORIDA — SHEET NUMBER 48

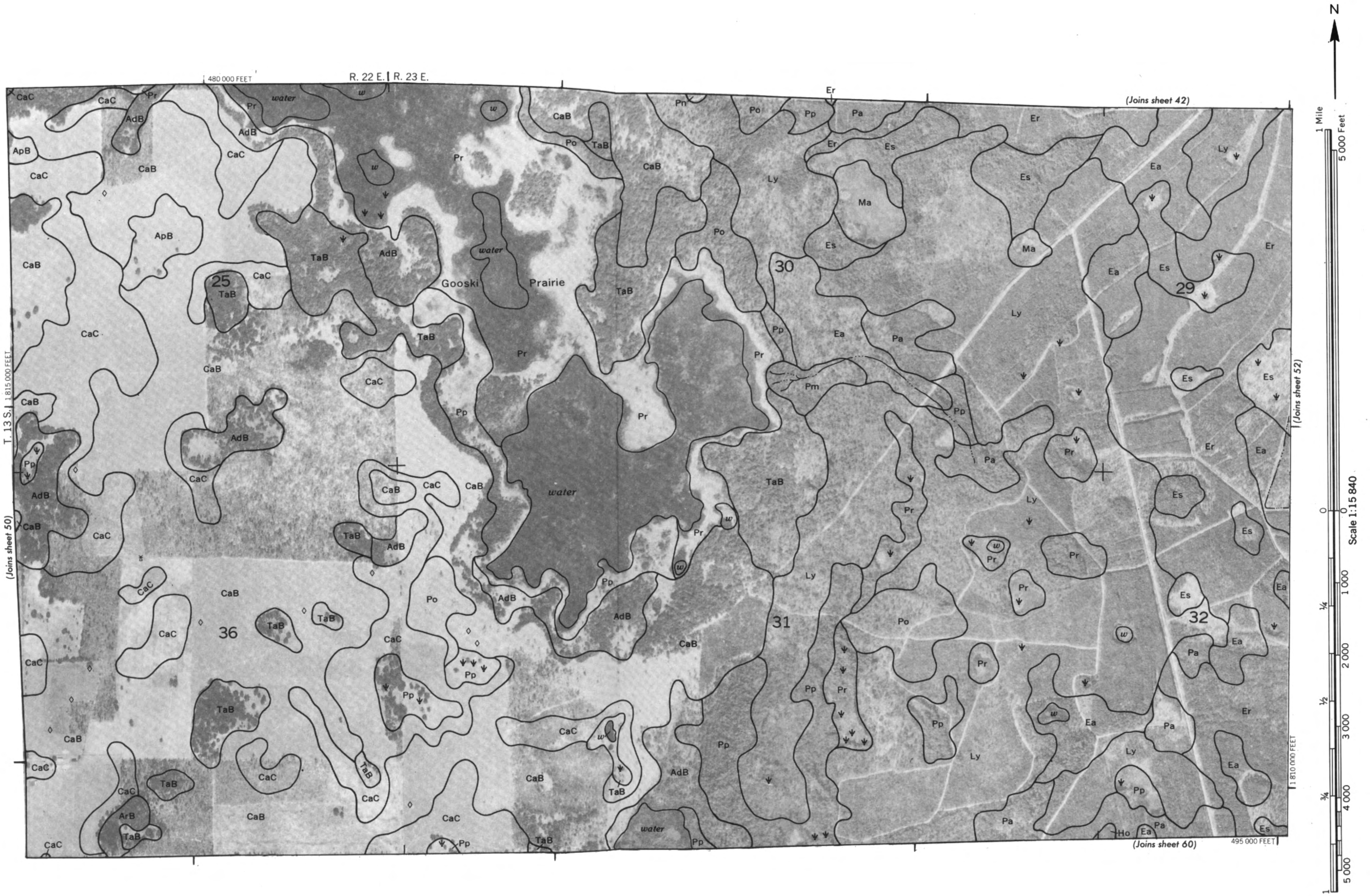

N
1 Mile
5 000 Feet
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840
(Joins sheet 39)
R. 21 E.
435 000 FEET
(Joins sheet 47)
(Joins sheet 49)
1 815 000 FEET
T. 13 S.
1 810 000 FEET
(Joins sheet 56)
(Joins sheet 57)
425 000 FEET
Stephen D.
Fernandez
Grant
Lowell
John
Broward
Grant
State Correction Institution
SEABOARD COAST LINE
75
93
225 A
329
25 ALT
27
28
29
30
31
32
33
34

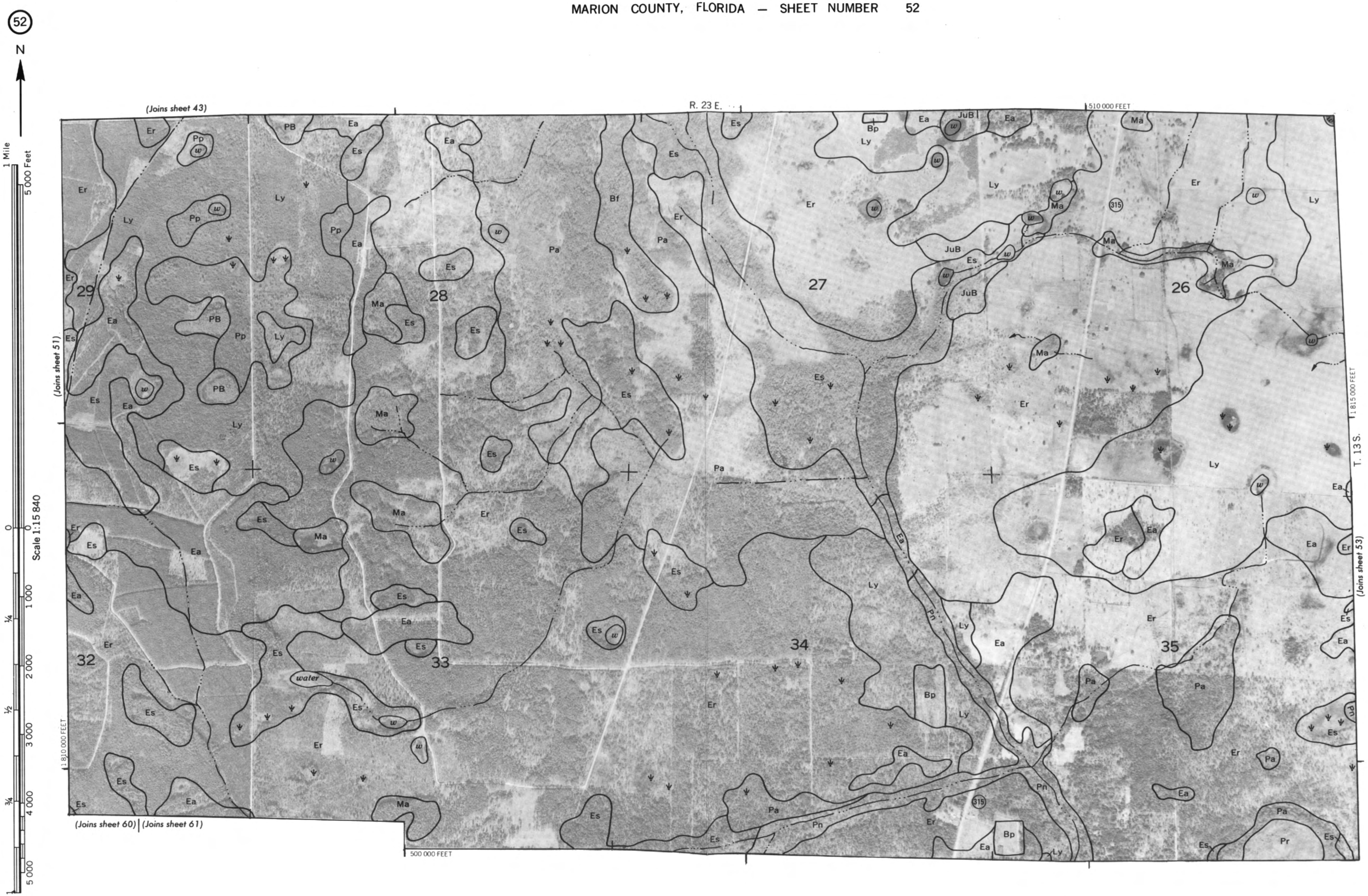
MARION COUNTY, FLORIDA — SHEET NUMBER 49

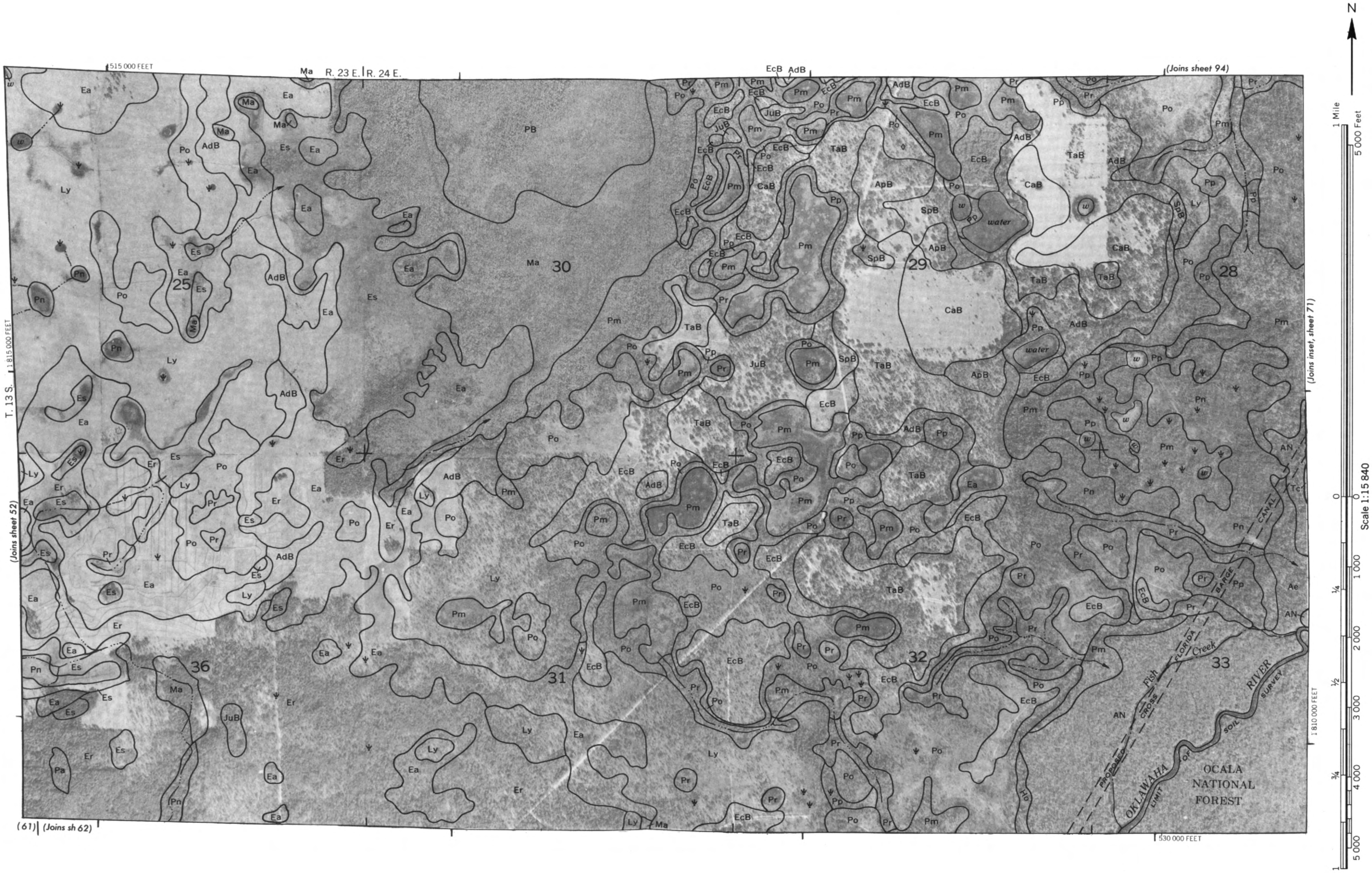

49
N
440 000 FEET
R. 21 E.
R. 22 E.
(Joins sheet 40)
(Joins sheet 48)
(Joins sheet 50)
(Joins sheet 57)
(Joins sheet 58)
T. 13 S.
1 815 000 FEET
1 810 000 FEET
455 000 FEET
ZuB
KeB
ArB
HaB
ArC
KeC
McC
ZuC
GaB
GaC
LoB
SpC
SpB
BoC
Bp
HaC
FmB
BcB
McB
UaF
UaA
FeB
LoC
WgB
WaC
KaB
KeA
Pp
26
25
30
29
37
36
35
31
32
329
301
441
25
200
water
MINE PIT
John
Broward
Grant
State Correction Institution
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000

# MARION COUNTY, FLORIDA — SHEET NUMBER 50

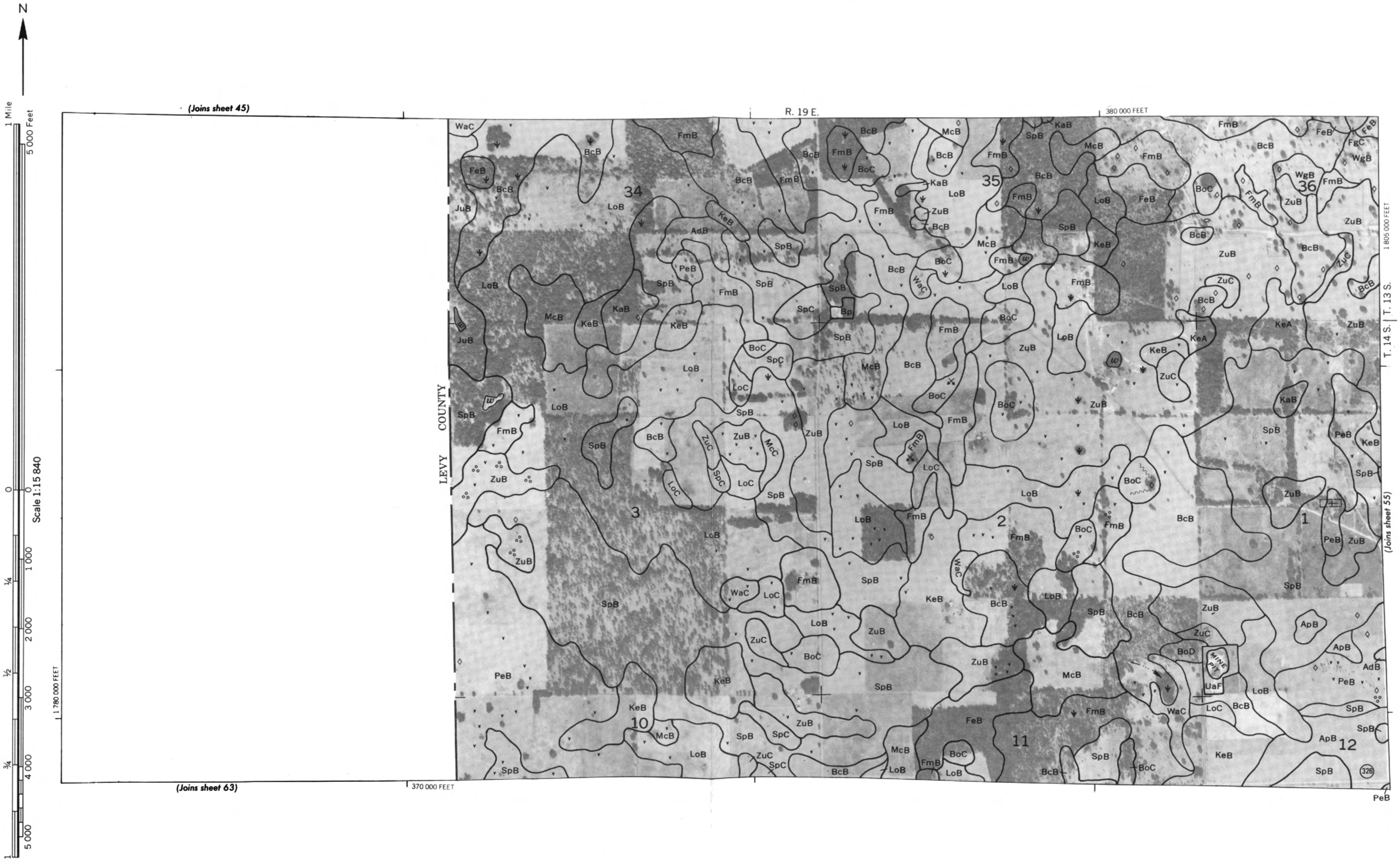

N
(Joins sheet 41)
(Joins sheet 49)
(Joins sheet 51)
(Joins sheet 59)
R. 22 E.
T. 13 S.
475 000 FEET
460 000 FEET
1 815 000 FEET
1 810 000 FEET
Sparr
SEABOARD COAST LINE
200 A
26
27
28
29
32
33
34
35
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

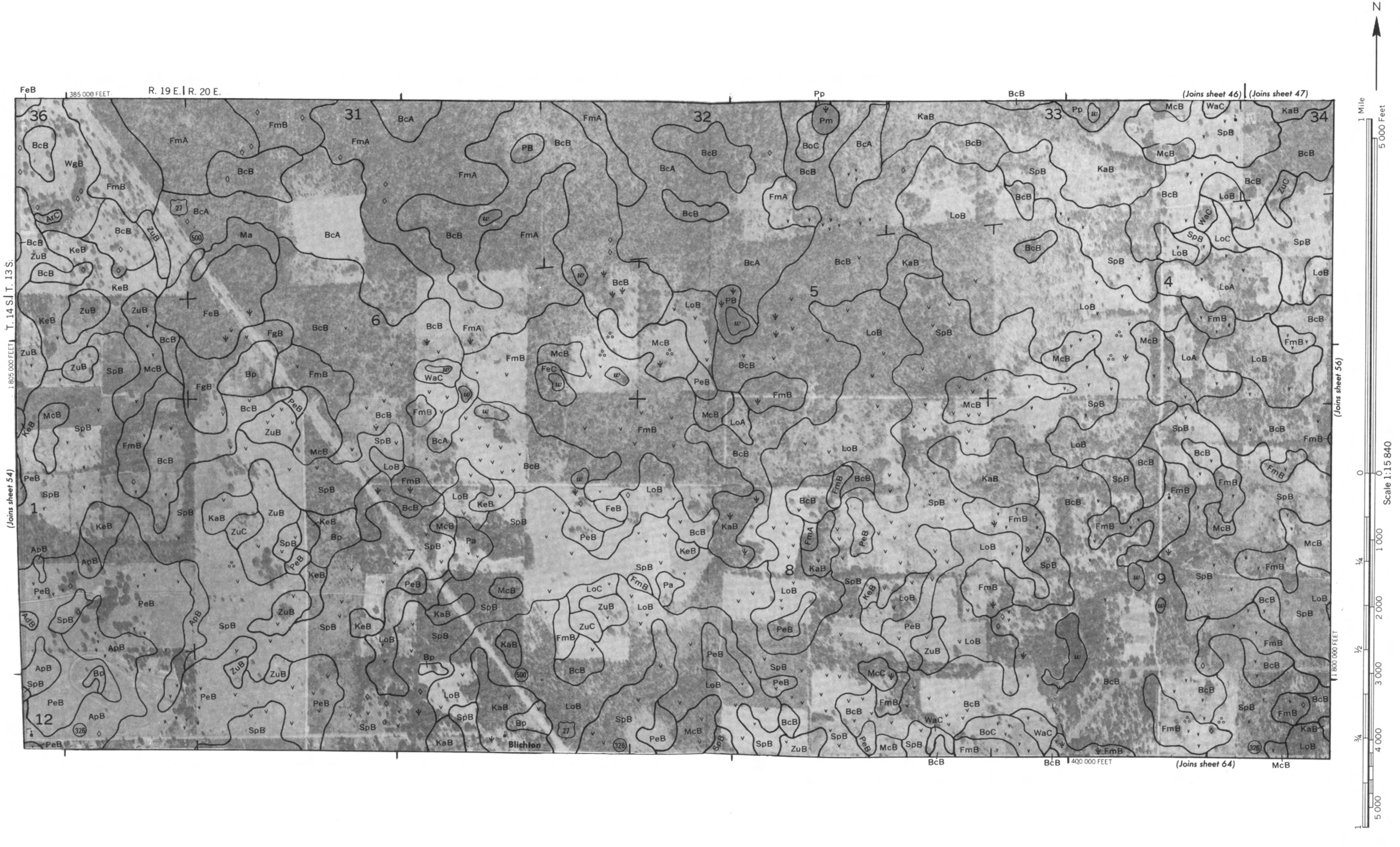

N
480 000 FEET
R. 22 E.
R. 23 E.
Er
(Joins sheet 42)
(Joins sheet 52)
(Joins sheet 60)
(Joins sheet 50)
T. 13 S.
1 815 000 FEET
1 810 000 FEET
495 000 FEET
Gooski
Prairie
water
w
25
30
29
36
31
32
CaC
CaB
ApB
AdB
ArB
Pr
Pn
Po
Pp
Pa
Pm
TaB
Ly
Er
Es
Ea
Ma
Ho
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


52
N
1 Mile
5 000 Feet
Scale 1:15 840
(Joins sheet 43)
R. 23 E.
510 000 FEET
(Joins sheet 51)
(Joins sheet 53)
T. 13 S.
1 815 000 FEET
1 810 000 FEET
500 000 FEET
(Joins sheet 60)
(Joins sheet 61)
27
26
28
29
32
33
34
35
315
water


53
N
515 000 FEET
R. 23 E.
R. 24 E.
(Joins sheet 94)
(Joins inset, sheet 71)
(Joins sheet 52)
(61)
(Joins sh 62)
1 815 000 FEET
1 810 000 FEET
530 000 FEET
T. 13 S.
25
30
29
28
36
31
32
33
water
Fish Creek
CROSS FLORIDA BARGE CANAL
PROPOSED
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
OCALA NATIONAL FOREST
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

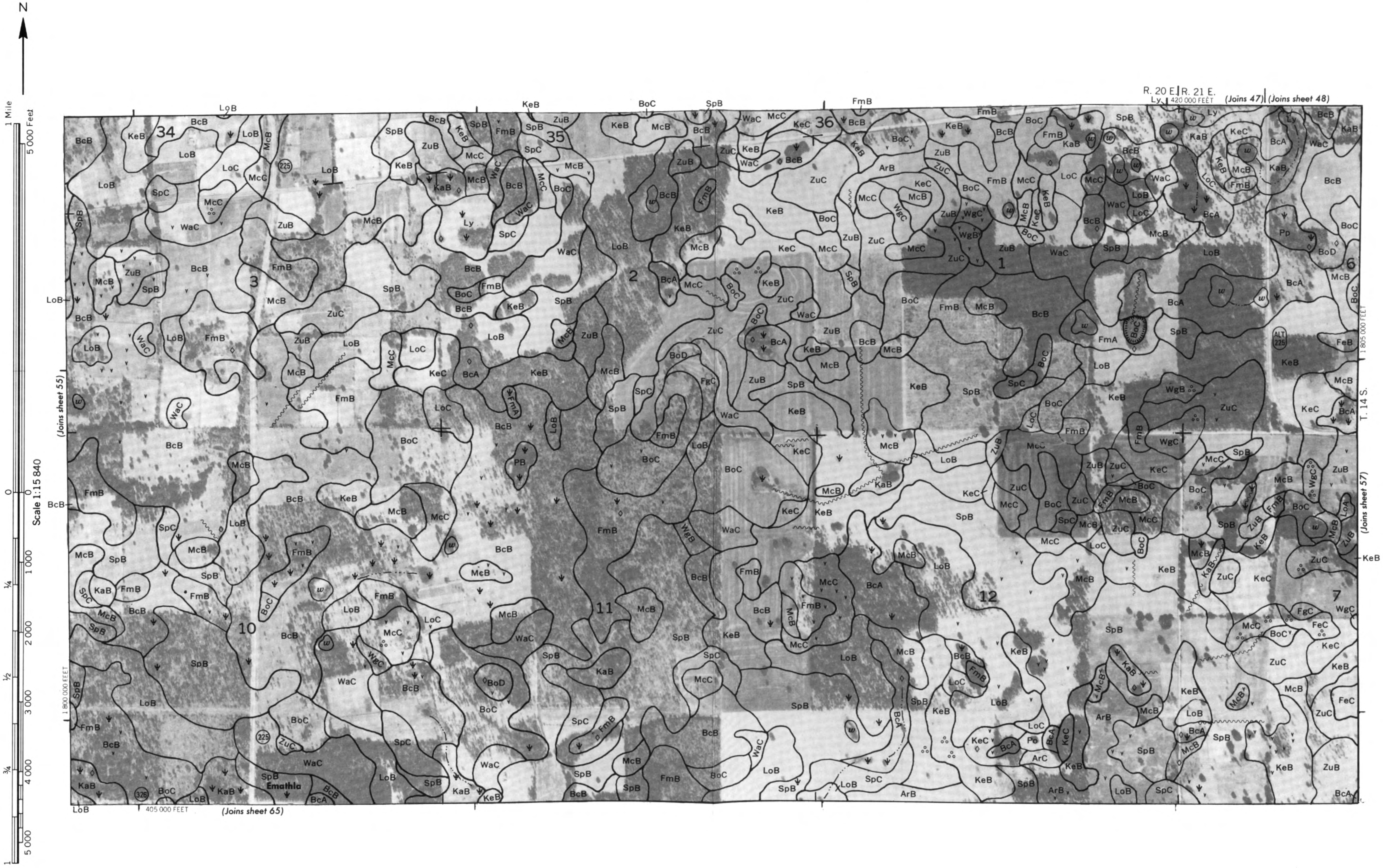
# MARION COUNTY, FLORIDA — SHEET NUMBER 54


N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 45)
R. 19 E.
380 000 FEET
1 805 000 FEET
T. 13 S.
T. 14 S.
(Joins sheet 55)
(Joins sheet 63)
370 000 FEET
1 780 000 FEET
LEVY COUNTY
34
35
36
3
2
1
10
11
12
326
WaC
FeB
BcB
JuB
LoB
McB
KeB
KaB
FmB
AdB
PeB
SpB
SpC
Bp
BoC
LoC
ZuB
ZuC
McC
KaB
MINE PIT
UaF
BoD
ApB
FgC
WgB
KeA
w
PeB

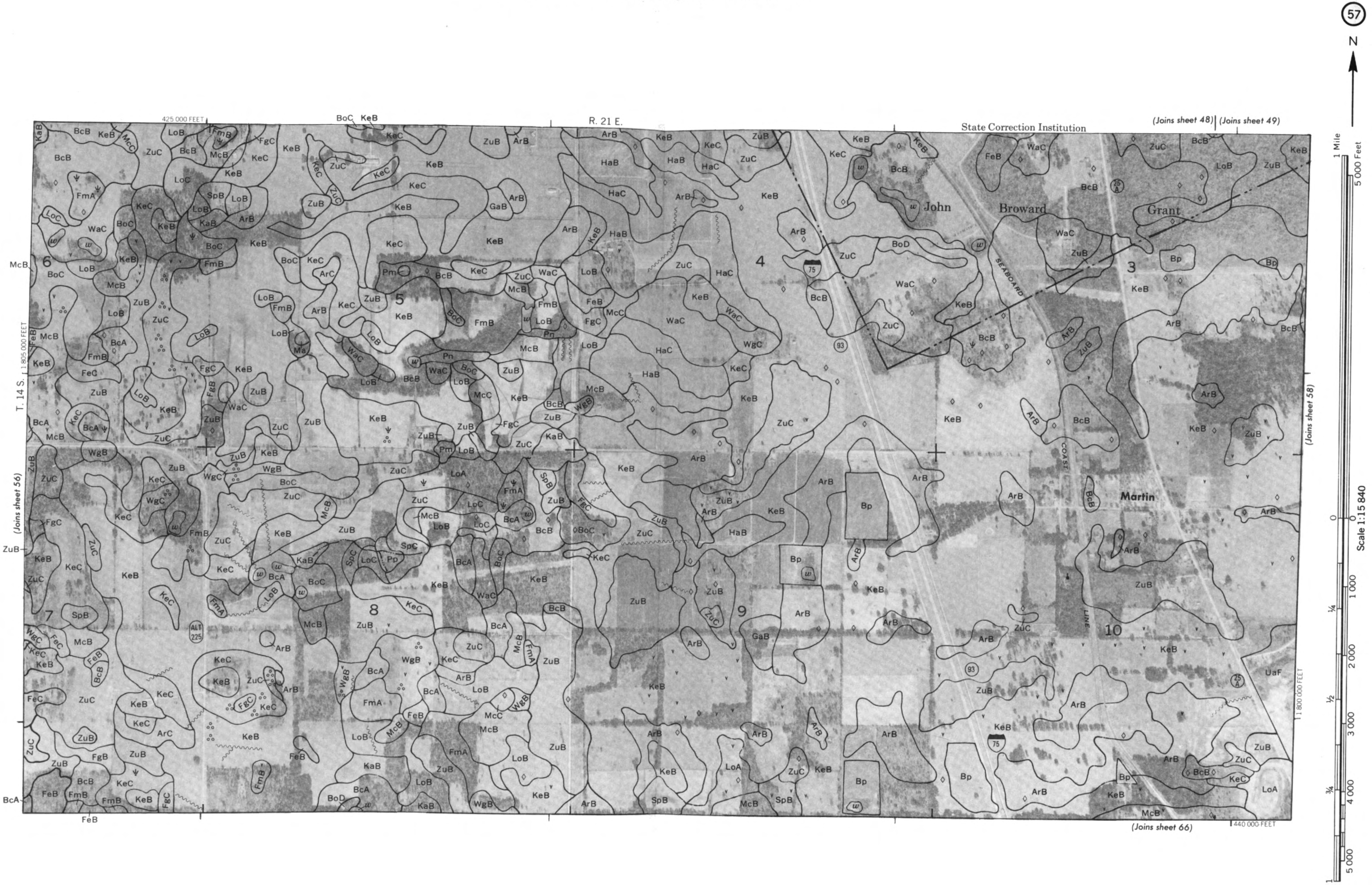

N
(Joins sheet 46)
(Joins sheet 47)
(Joins sheet 54)
(Joins sheet 56)
(Joins sheet 64)
385 000 FEET
400 000 FEET
1 805 000 FEET
1 800 000 FEET
R. 19 E.
R. 20 E.
T. 13 S.
T. 14 S.
Blichton
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000

56

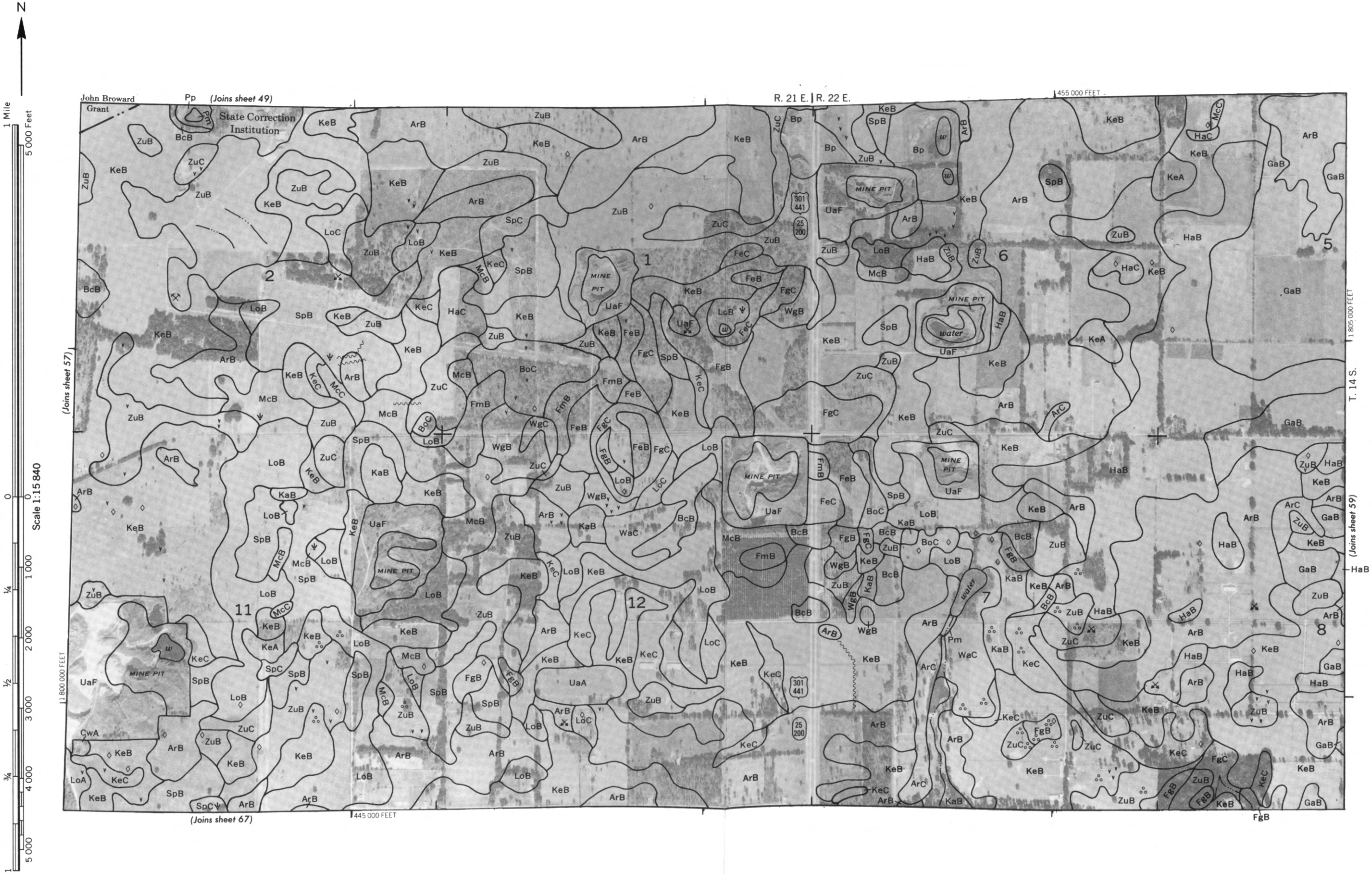
# MARION COUNTY, FLORIDA — SHEET NUMBER 56


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
R. 20 E.
R. 21 E.
420 000 FEET
(Joins 47)
(Joins sheet 48)
(Joins sheet 55)
(Joins sheet 57)
(Joins sheet 65)
T. 14 S.
1 805 000 FEET
1 800 000 FEET
405 000 FEET
Emathla
225
ALT 225
326
34
35
36
1
2
3
6
7
10
11
12
LoB
KeB
BoC
SpB
FmB
Ly
BcB
McB
WaC
ZuB
ZuC
KeC
BcA
McC
LoC
SpC
KaB
FmA
BoD
WgC
WgB
PB
Pp
Po
ArB
ArC
FeC
FeB
FgC
LoA
w

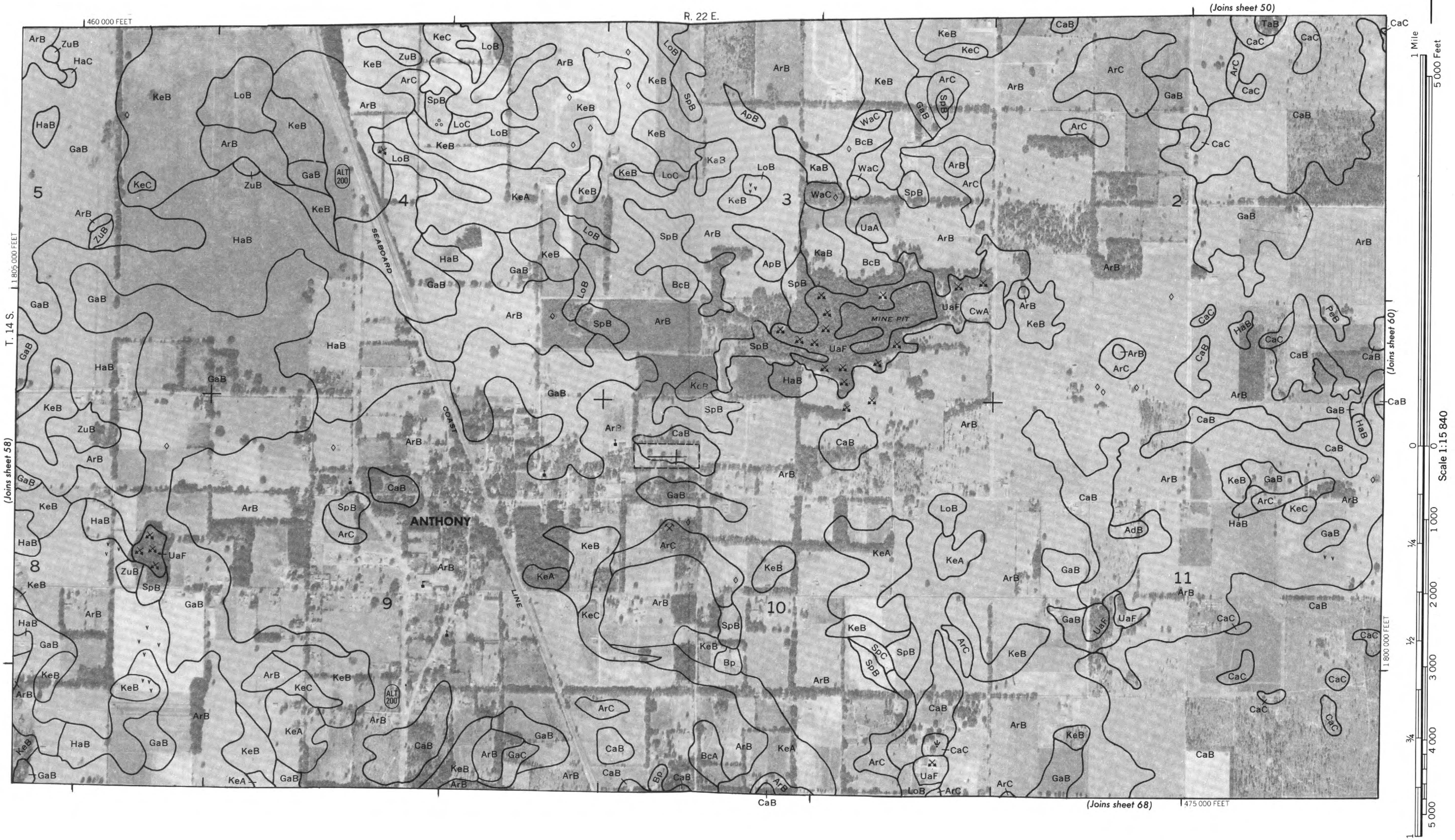
MARION COUNTY, FLORIDA – SHEET NUMBER 57


57
N
425 000 FEET
R. 21 E.
State Correction Institution
(Joins sheet 48)
(Joins sheet 49)
(Joins sheet 56)
(Joins sheet 58)
(Joins sheet 66)
T. 14 S.
1 805 000 FEET
1 800 000 FEET
440 000 FEET
John
Broward
Grant
Martin
SEABOARD
COAST
LINE
75
93
25A
ALT 225
3
4
5
6
7
8
9
10
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

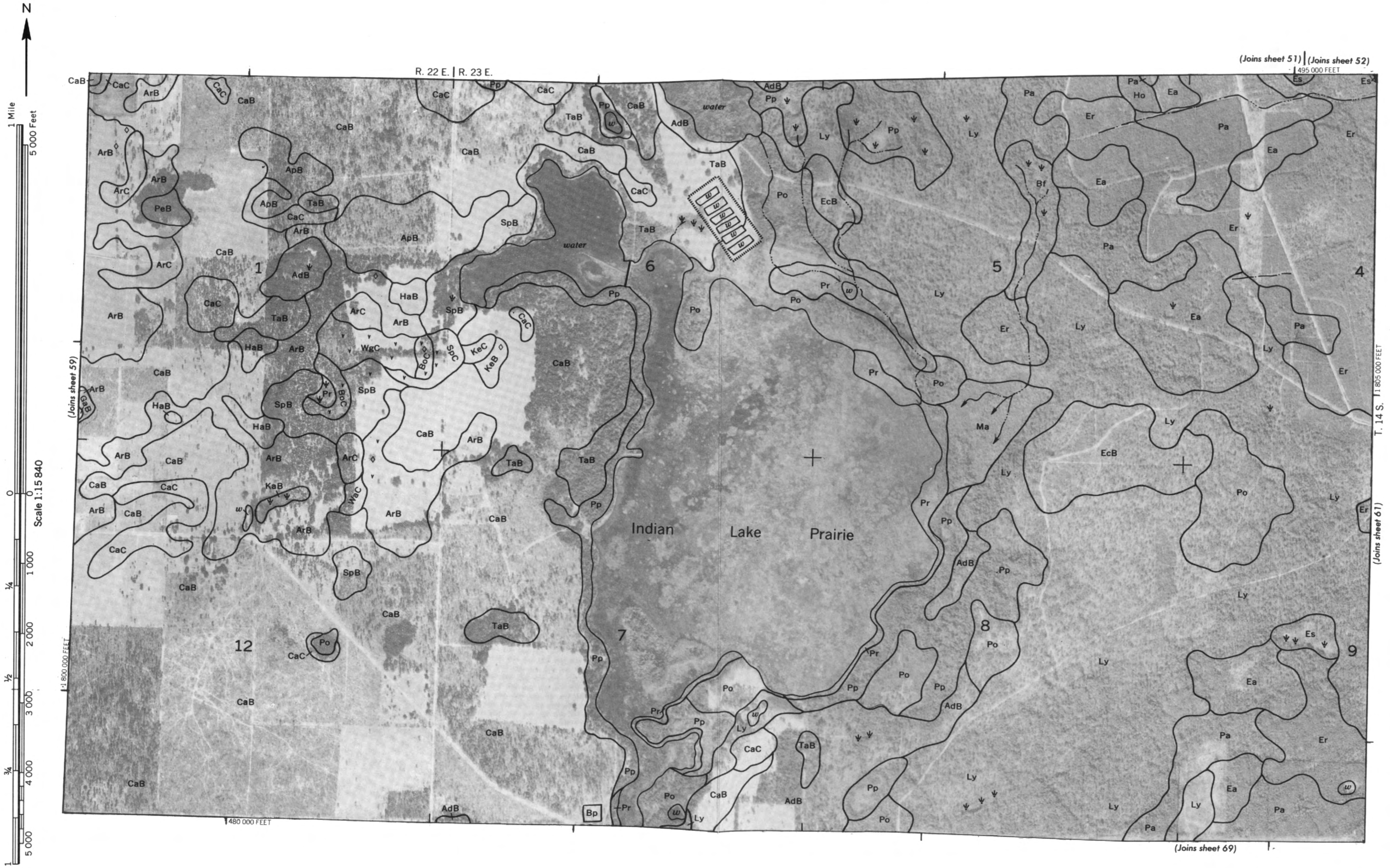
MARION COUNTY, FLORIDA — SHEET NUMBER 58

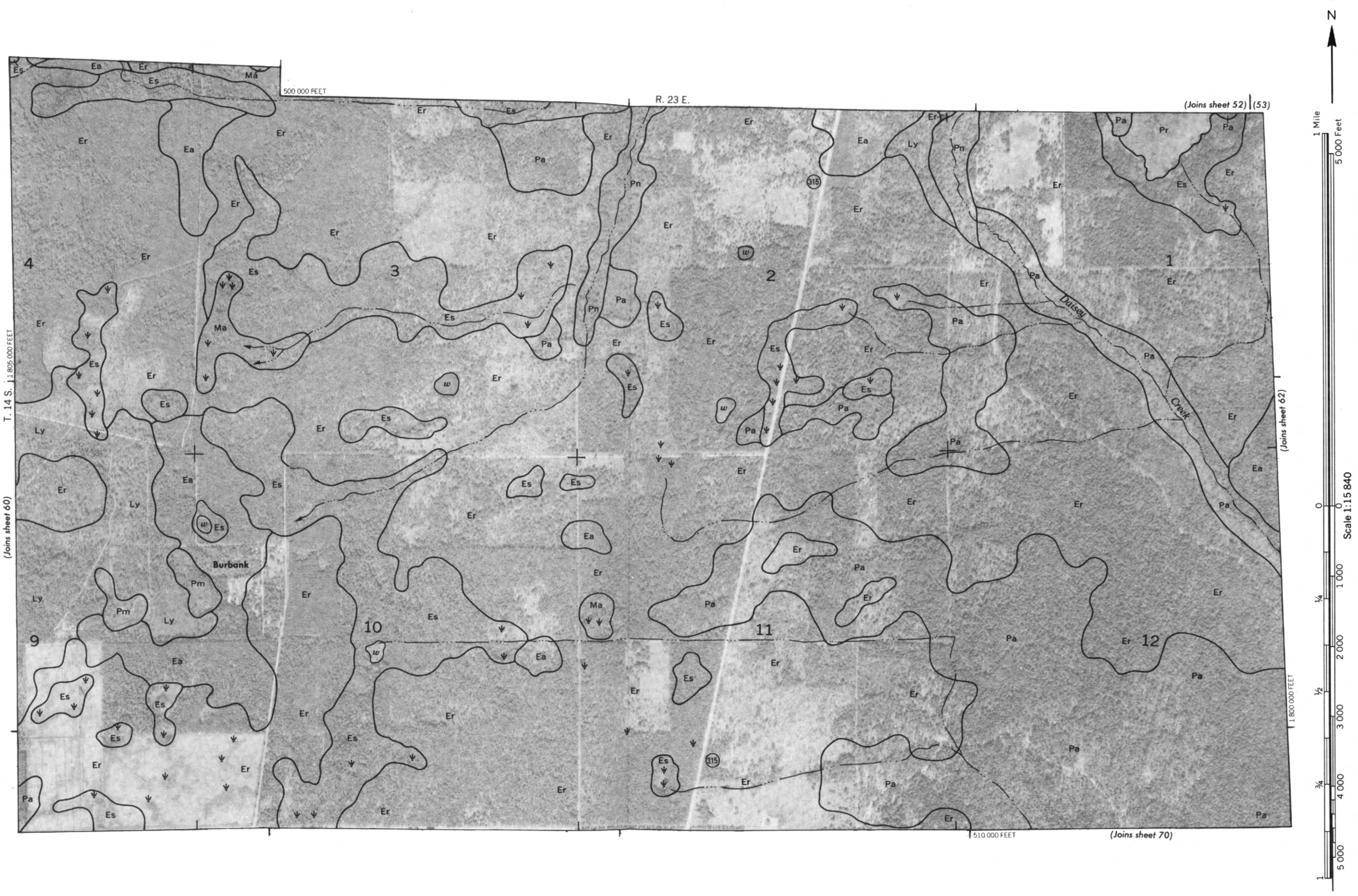

N
1 Mile
5 000 Feet
0
Scale 1:15 840
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
John Broward Grant
Pp
(Joins sheet 49)
State Correction Institution
R. 21 E. | R. 22 E.
455 000 FEET
1 805 000 FEET
T. 14 S.
(Joins sheet 59)
HaB
(Joins sheet 57)
1 800 000 FEET
(Joins sheet 67)
445 000 FEET
FgB
301
441
25
200
MINE PIT
water
w
1
2
5
6
7
8
11
12
ArB
KeB
ZuB
ZuC
SpB
LoB
McB
UaF
HaB
GaB
KeC
FeB
FgC
WgB
BcB
BoC
FmB
CwA
LoA
UaA
Pm
WaC
KaB
KeA
ArC
SpC
LoC
HaC
McC
FeC
LcB
KaB
FgB
Bp

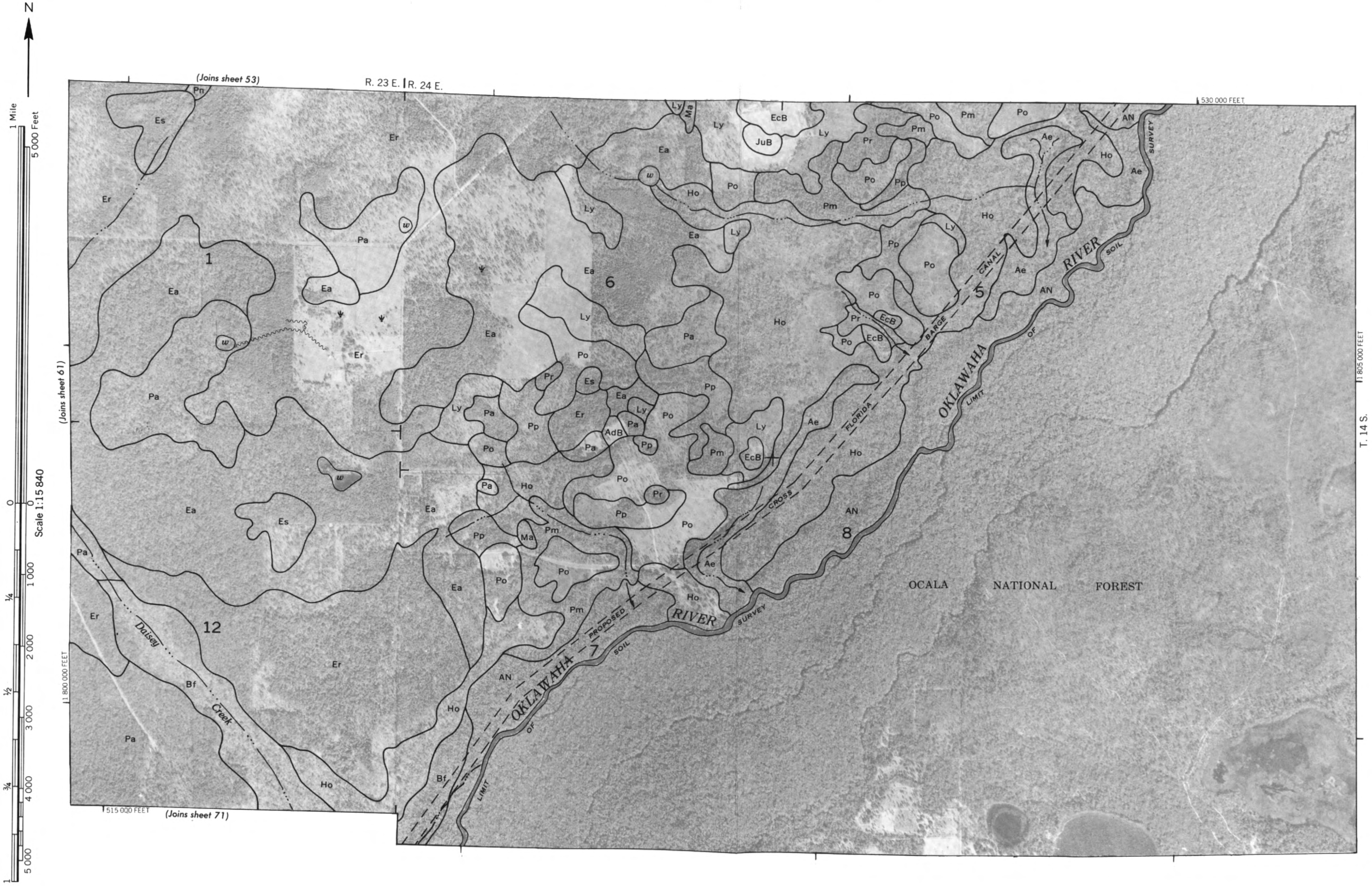
MARION COUNTY, FLORIDA — SHEET NUMBER 59


(Joins sheet 50)
R. 22 E.
460 000 FEET
1 805 000 FEET
T. 14 S.
(Joins sheet 58)
(Joins sheet 60)
1 800 000 FEET
(Joins sheet 68)
475 000 FEET
N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
ANTHONY
SEABOARD
COAST
LINE
MINE PIT
ALT 200
2
3
4
5
8
9
10
11
ArB
ArC
AdB
ApB
BcA
BcB
Bp
CaB
CaC
CwA
GaB
GaC
HaB
HaC
KaB
KeA
KeB
KeC
LoB
LoC
PeB
SpB
SpC
TaB
UaA
UaF
WaC
ZuB

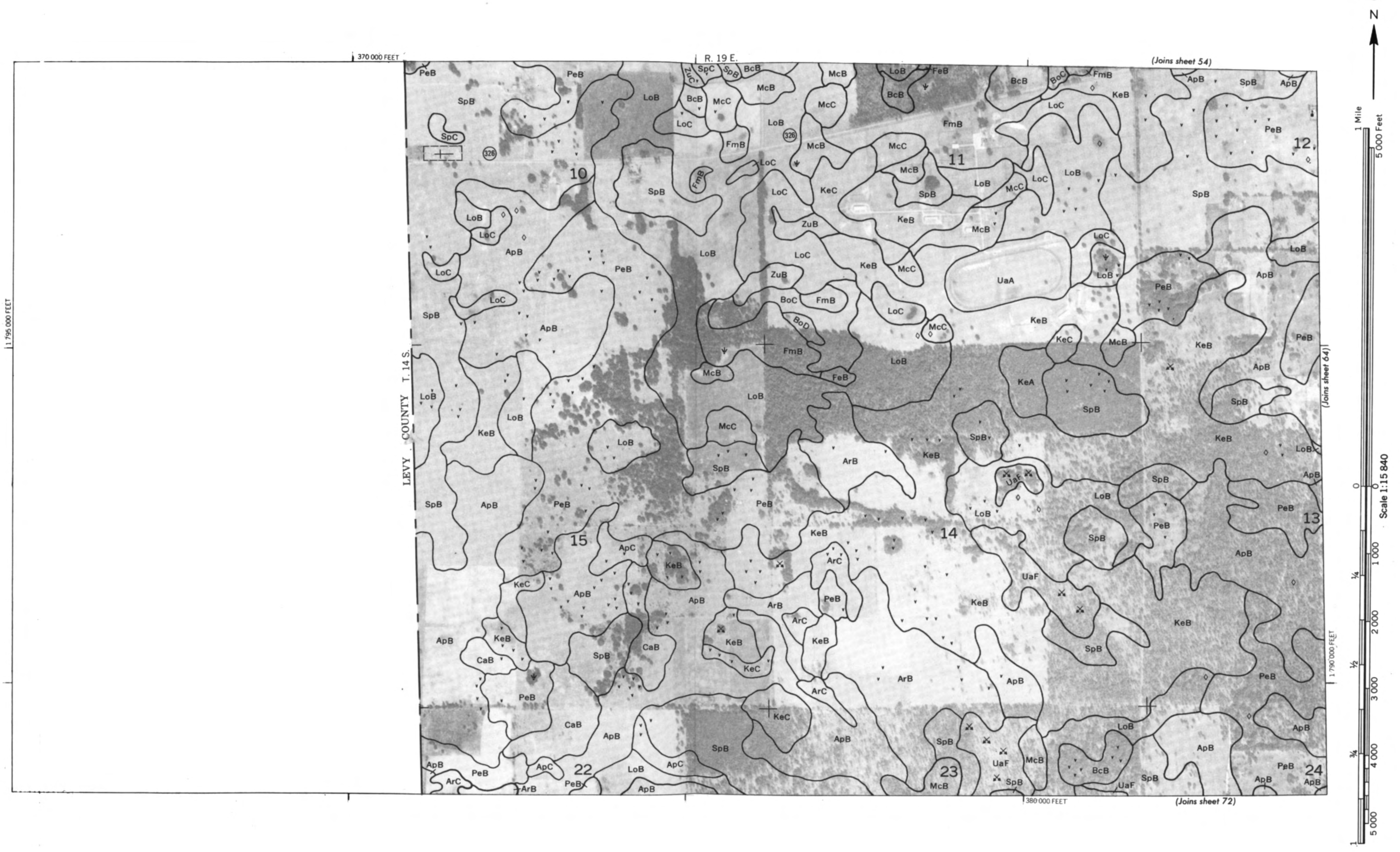
# MARION COUNTY, FLORIDA — SHEET NUMBER 60


N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840
R. 22 E. | R. 23 E.
(Joins sheet 51) | (Joins sheet 52)
495 000 FEET
(Joins sheet 59)
(Joins sheet 61)
(Joins sheet 69)
T. 14 S.
1 805 000 FEET
1 800 000 FEET
480 000 FEET
Indian Lake Prairie
water
1
4
5
6
7
8
9
12
Bp
CaB
CaC
ArB
ArC
ApB
PeB
TaB
AdB
HaB
SpB
SpC
WgC
BoC
KeC
KeB
KaB
WaC
GaB
Pr
Pp
Po
Ly
EcB
Er
Ea
Es
Pa
Ho
Bf
Ma
w

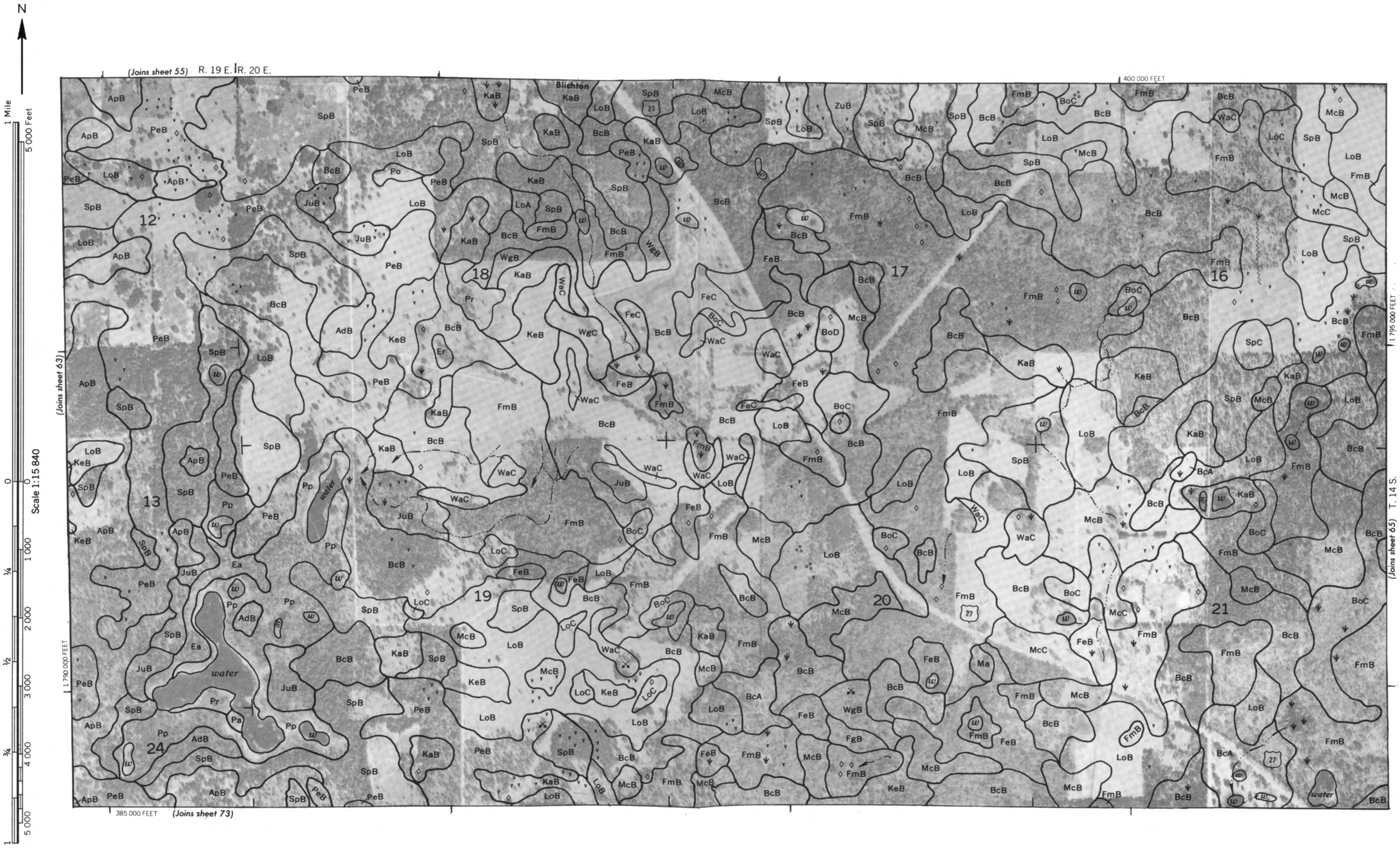

61
N
500 000 FEET
R. 23 E.
(Joins sheet 52)
(53)
T. 14 S.
1 805 000 FEET
(Joins sheet 60)
(Joins sheet 62)
(Joins sheet 70)
510 000 FEET
1 800 000 FEET
Burbank
Daisey
Creek
315
1
2
3
4
9
10
11
12
Er
Ea
Es
Ma
Pa
Pn
Pr
Ly
Pm
w
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1


N
1 Mile
5 000 Feet
0
0
1 000
¼
2 000
½
3 000
¾
4 000
1
5 000
Scale 1:15 840
(Joins sheet 53)
R. 23 E.
R. 24 E.
530 000 FEET
(Joins sheet 61)
1 805 000 FEET
T. 14 S.
1 800 000 FEET
515 000 FEET
(Joins sheet 71)
OCALA NATIONAL FOREST
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
PROPOSED CROSS FLORIDA BARGE CANAL
Daisy Creek
1
5
6
7
8
12
Pn
Es
Er
Ea
Pa
w
Ly
Ma
EcB
JuB
Po
Pm
Pr
Pp
AN
Ae
Ho
AdB
Bf

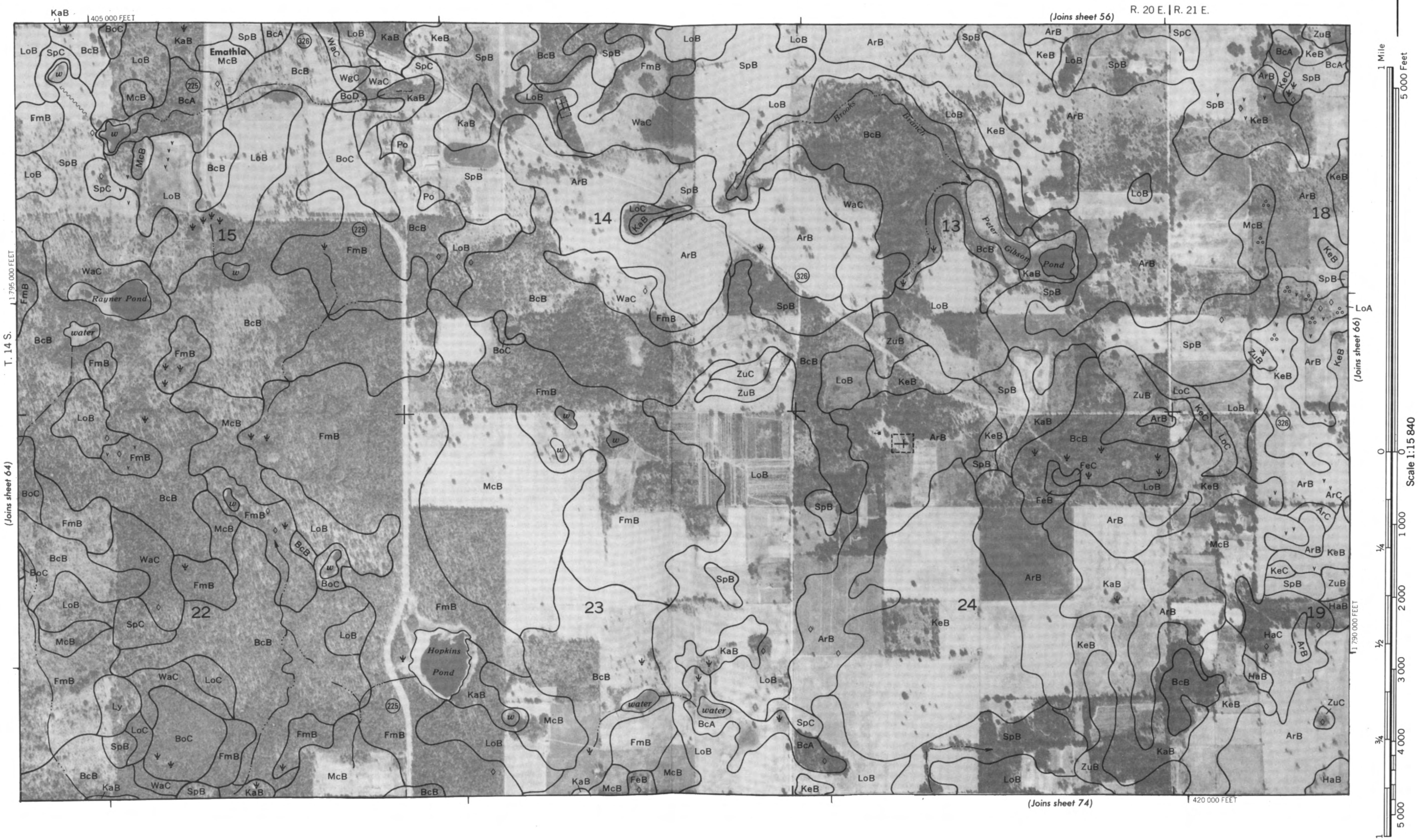
# MARION COUNTY, FLORIDA — SHEET NUMBER 63


63
N
370 000 FEET
R. 19 E.
(Joins sheet 54)
(Joins sheet 64)
(Joins sheet 72)
380 000 FEET
1 795 000 FEET
1 790 000 FEET
LEVY COUNTY
T. 14 S.
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
326
10
11
12
13
14
15
22
23
24
PeB
SpB
SpC
PeB
LoB
ZuC
SpC
SpB
BcB
McB
LoB
FeB
BcB
BoC
FmB
ApB
SpB
ApB
BcB
McC
McB
McC
LoB
FmB
LoC
KeB
PeB
LoC
FmB
McB
McC
McB
LoC
LoB
SpB
FmB
LoC
KeC
SpB
LoB
McC
LoC
LoB
LoC
ApB
ZuB
KeB
McB
LoC
LoB
LoC
PeB
LoB
LoC
KeB
McC
UaA
LoB
LoB
SpB
ZuB
BoC
FmB
LoC
McC
KeB
ApB
PeB
ApB
BoD
FmB
McB
FeB
LoB
KeC
McB
KeB
ApB
LoB
LoB
LoB
KeA
SpB
SpB
KeB
McC
LoB
KeB
LoB
ArB
SpB
KeB
LoB
SpB
SpB
ApB
PeB
SpB
PeB
UaF
LoB
LoB
ApB
PeB
SpB
ApC
KeB
KeB
ArC
LoB
SpB
ApB
13
KeC
ApB
ApB
PeB
UaF
KeB
ApB
ArB
ArC
KeB
KeB
ApB
KeB
SpB
KeC
CaB
SpB
CaB
KeC
ArC
ArB
ApB
PeB
PeB
CaB
ApB
KeC
ApB
SpB
UaF
McB
LoB
ApB
ApB
SpB
ApB
ArC
PeB
ApC
LoB
ApC
McB
BcB
UaF
SpB
SpB
ArB
PeB
ApB
ApB
PeB
ApB

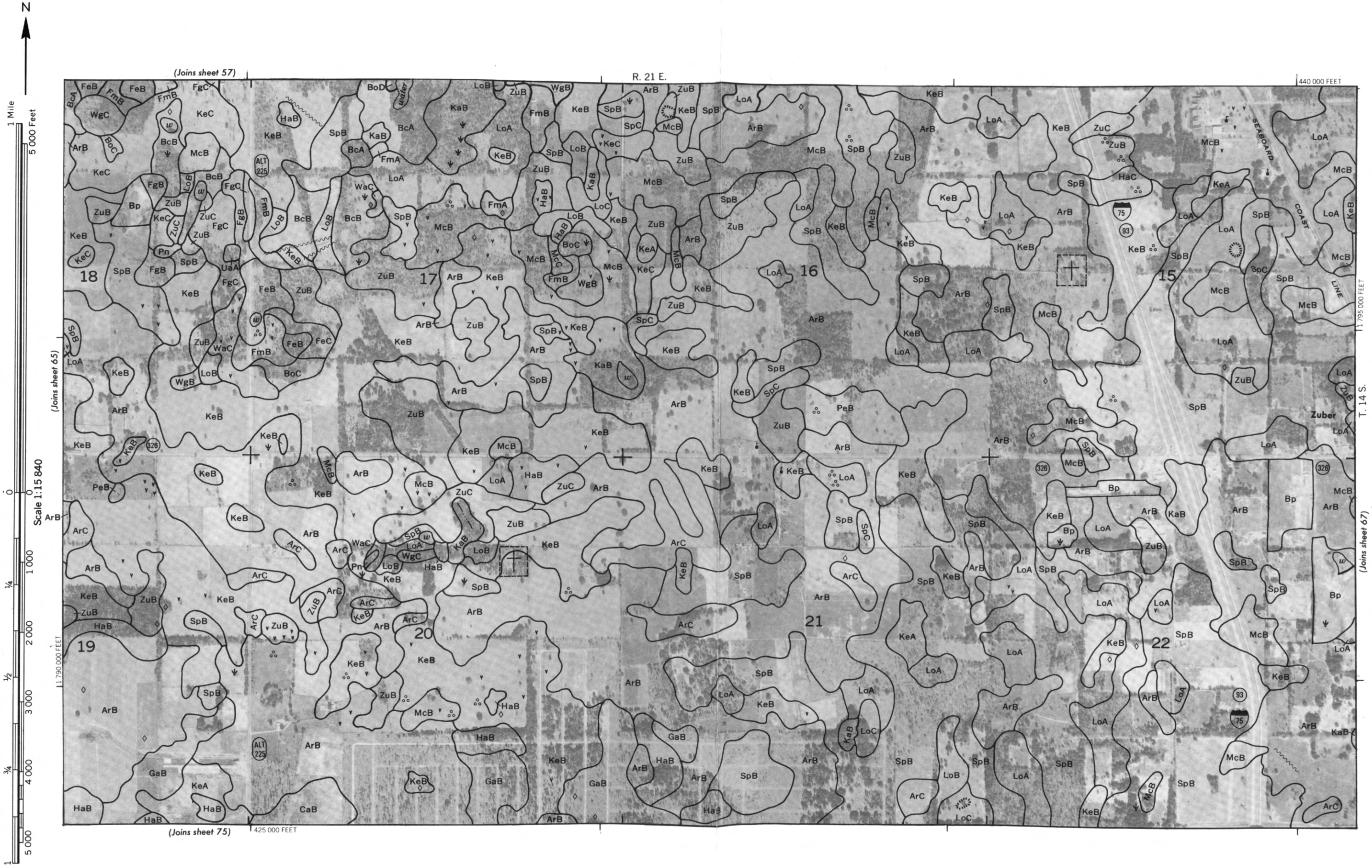
# MARION COUNTY, FLORIDA — SHEET NUMBER 64


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000
(Joins sheet 55)
R. 19 E.
R. 20 E.
400 000 FEET
(Joins sheet 63)
(Joins sheet 65)
1 795 000 FEET
1 790 000 FEET
T. 14 S.
385 000 FEET
(Joins sheet 73)
Blichton
27
12
13
16
17
18
19
20
21
24
water

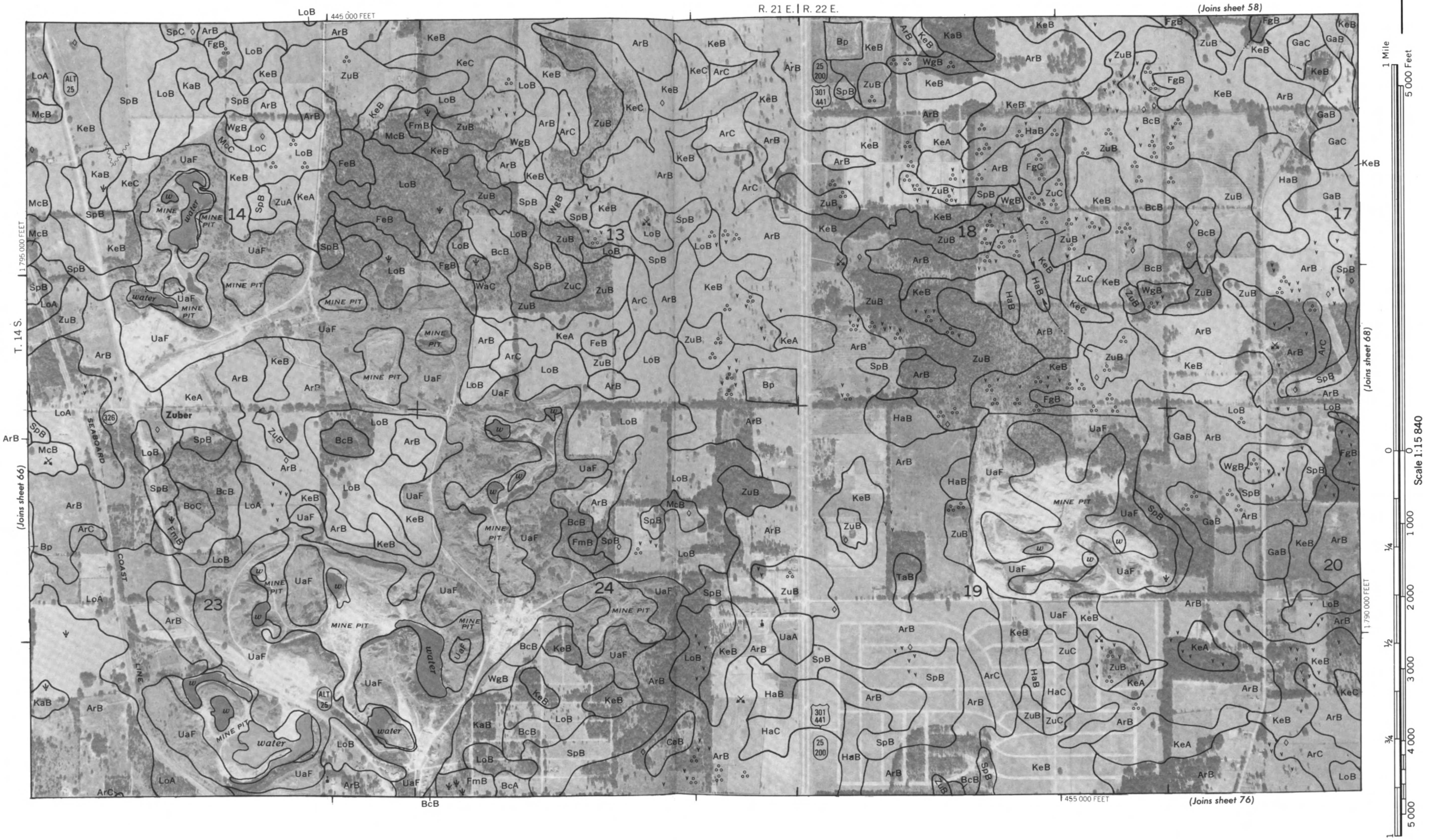
MARION COUNTY, FLORIDA — SHEET NUMBER 65

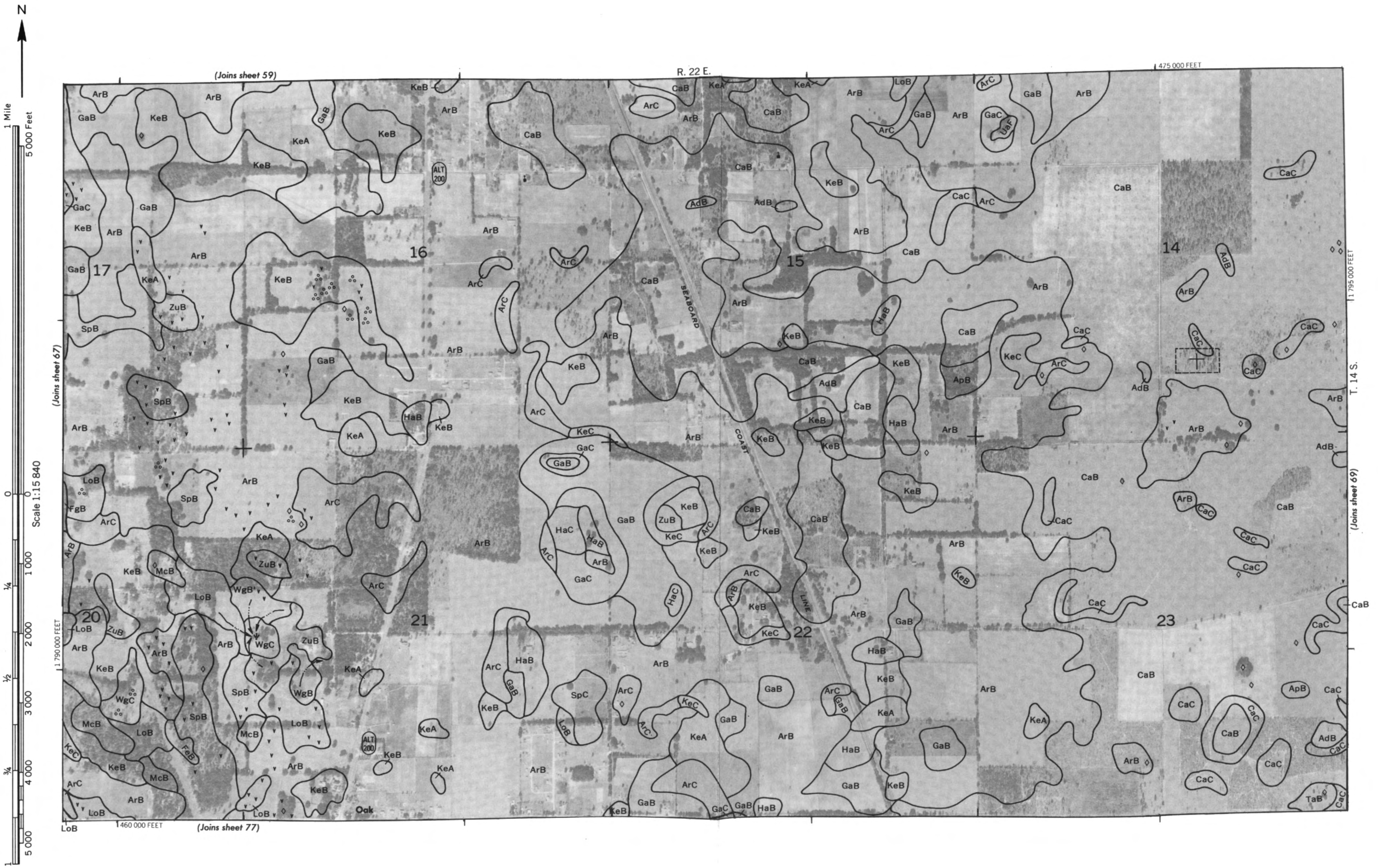

65
N
(Joins sheet 56)
(Joins sheet 64)
(Joins sheet 66)
(Joins sheet 74)
R. 20 E. | R. 21 E.
T. 14 S.
405 000 FEET
420 000 FEET
1 795 000 FEET
1 790 000 FEET
Emathla
Rayner Pond
Hopkins Pond
Pond
Brooks Branch
Peter Gibson
water
225
326
13
14
15
18
19
22
23
24
Scale 1:15 840
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000

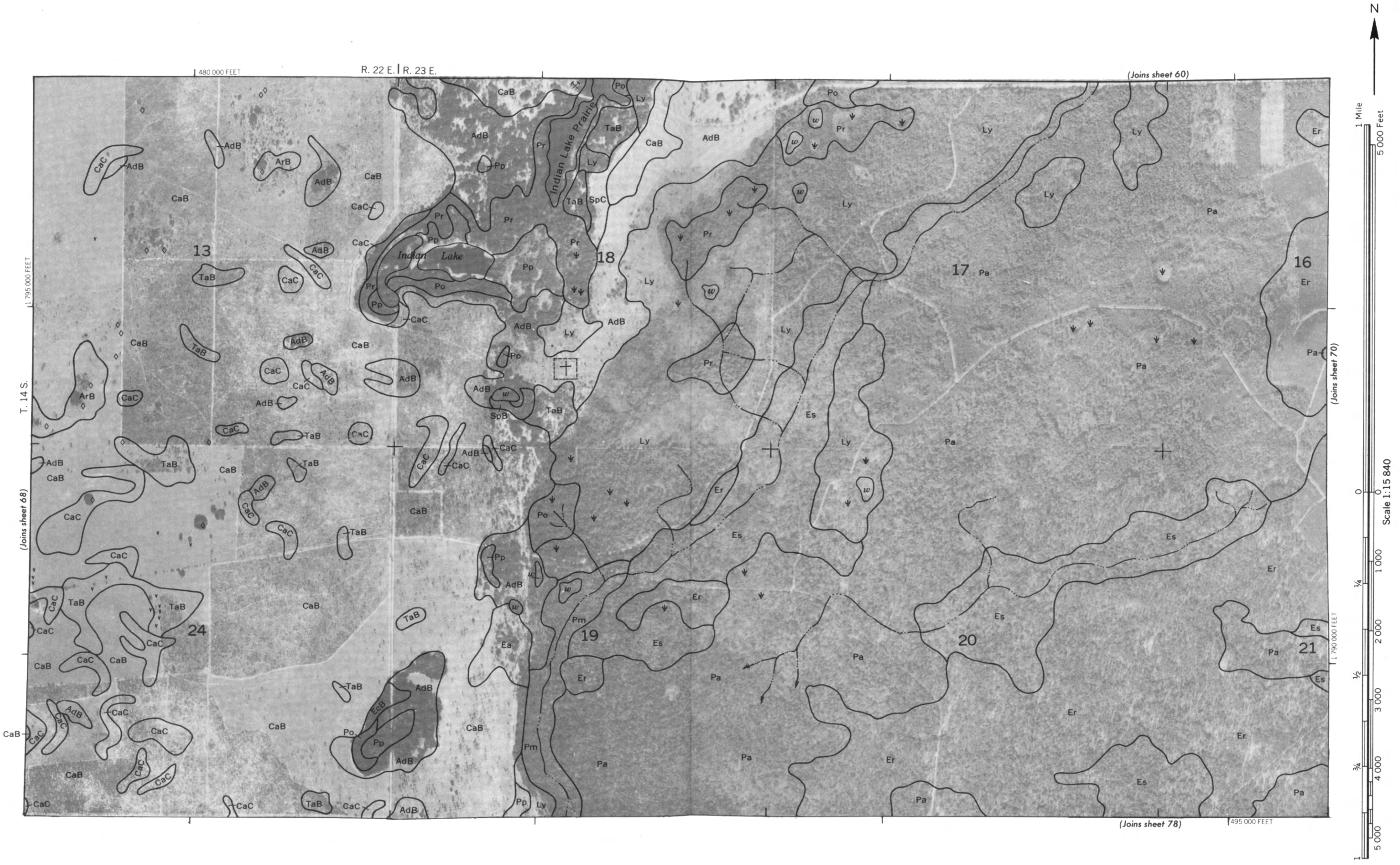
# MARION COUNTY, FLORIDA — SHEET NUMBER 66

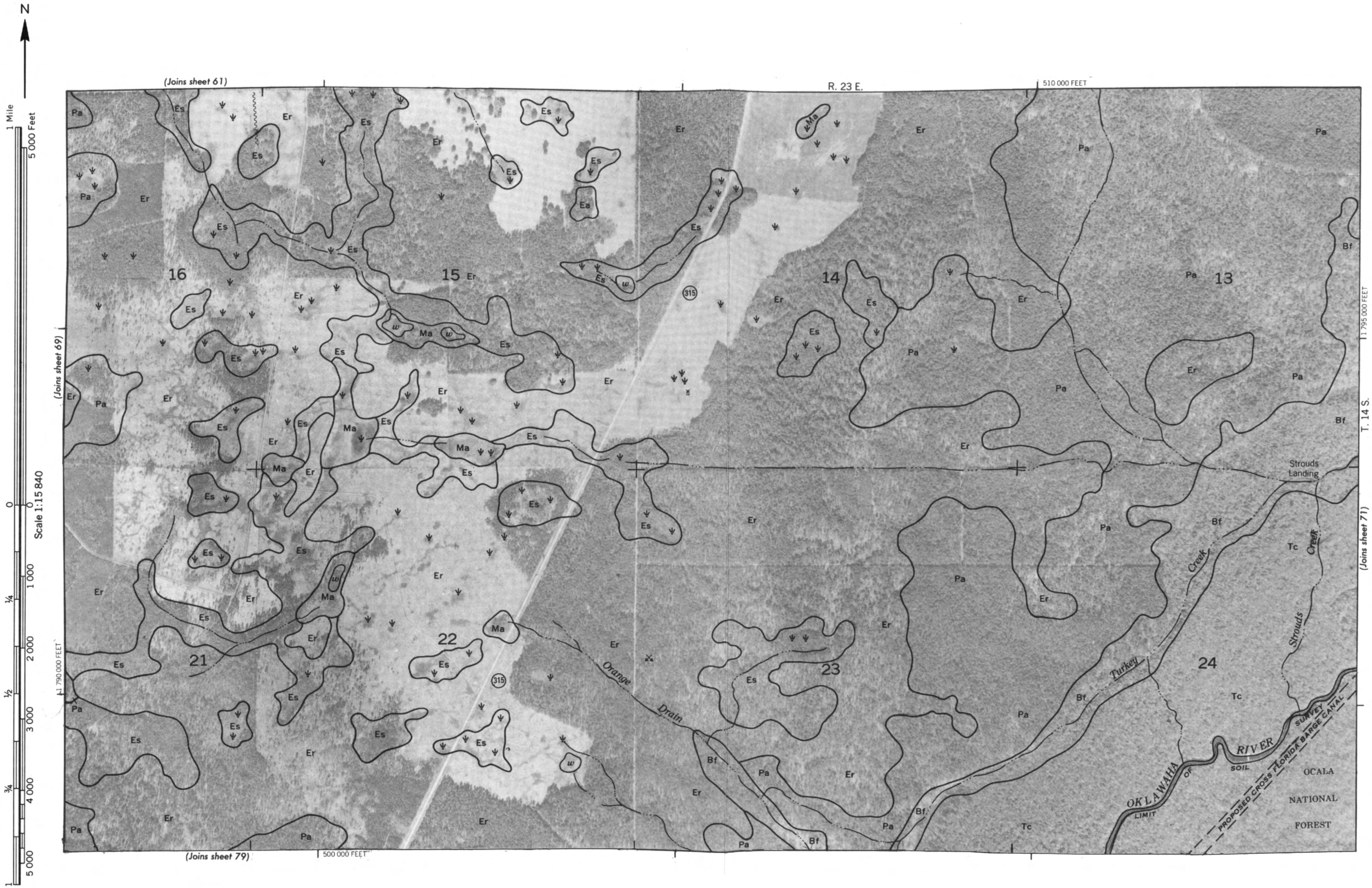

N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1000
2000
3000
4000
5 000
(Joins sheet 57)
R. 21 E.
440 000 FEET
1 795 000 FEET
T. 14 S.
(Joins sheet 65)
(Joins sheet 67)
1 790 000 FEET
(Joins sheet 75)
425 000 FEET
15
16
17
18
19
20
21
22
Zuber
SEABOARD
COAST
LINE
ALT 225
326
75
93
water

# MARION COUNTY, FLORIDA — SHEET NUMBER 67

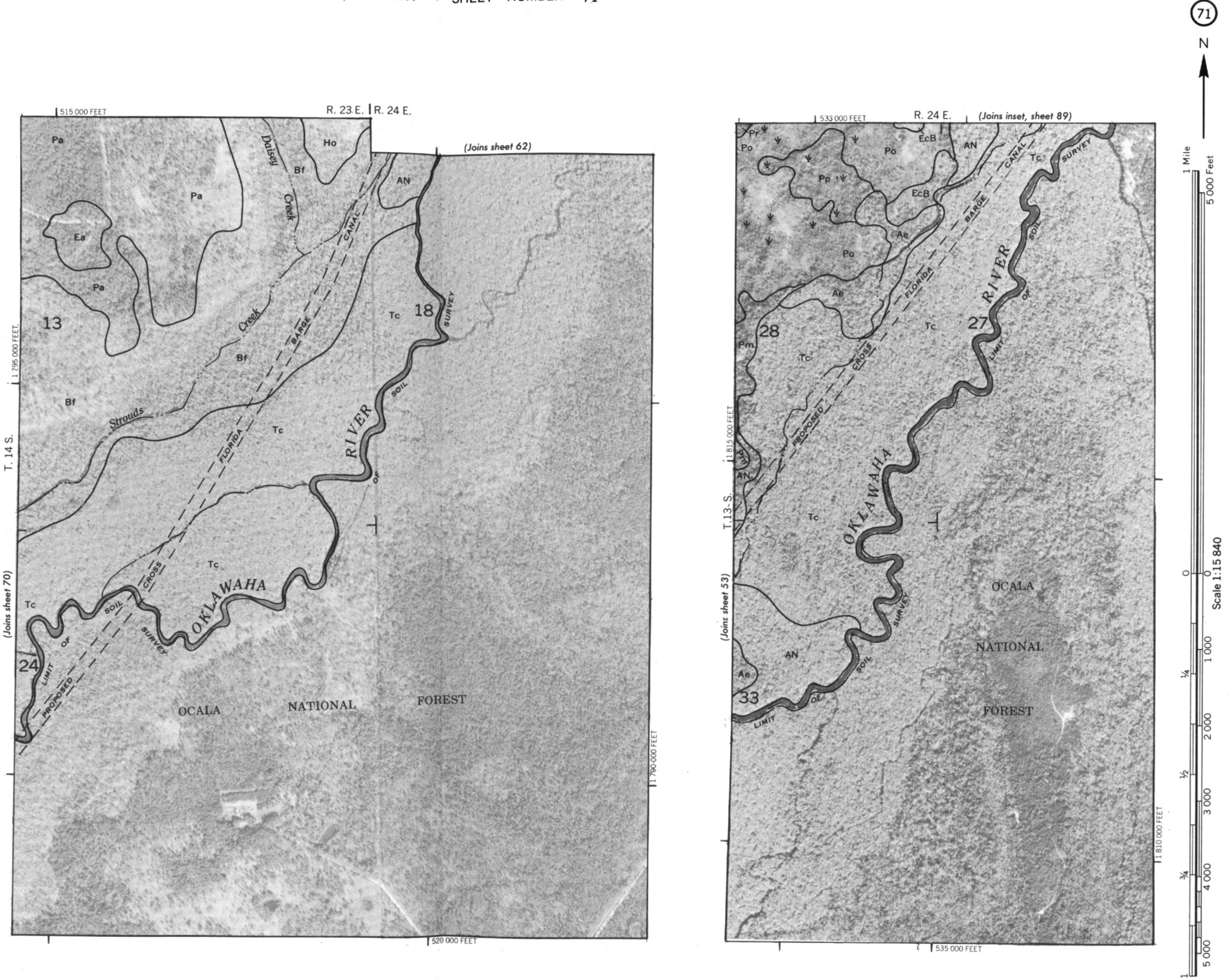

N
R. 21 E. | R. 22 E.
445 000 FEET
455 000 FEET
1 795 000 FEET
1 790 000 FEET
(Joins sheet 58)
(Joins sheet 68)
(Joins sheet 76)
(Joins sheet 66)
T. 14 S.
Zuber
SEABOARD
COAST
LINE
ALT 25
326
25 200
301 441
13
14
17
18
19
20
23
24
MINE PIT
water
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
(Joins sheet 59)
R. 22 E.
475 000 FEET
1 795 000 FEET
T. 14 S.
(Joins sheet 69)
(Joins sheet 67)
1 790 000 FEET
460 000 FEET
(Joins sheet 77)
SEABOARD
COAST
LINE
ALT 200
Oak
14
15
16
17
20
21
22
23
ArB
ArC
AdB
ApB
CaB
CaC
FeB
GaB
GaC
HaB
HaC
KeA
KeB
KeC
LoB
McB
SpB
SpC
TaB
UaF
WgB
WgC
ZuB


69
N
480 000 FEET
R. 22 E.
R. 23 E.
(Joins sheet 60)
(Joins sheet 68)
(Joins sheet 70)
(Joins sheet 78)
1 795 000 FEET
1 790 000 FEET
495 000 FEET
T. 14 S.
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
13
16
17
18
19
20
21
24
Indian Lake
Indian Lake Prairie
AdB
ArB
CaB
CaC
EaB
Ea
Er
Es
Ly
Pa
Pm
Po
Pp
Pr
SpB
SpC
TaB
w

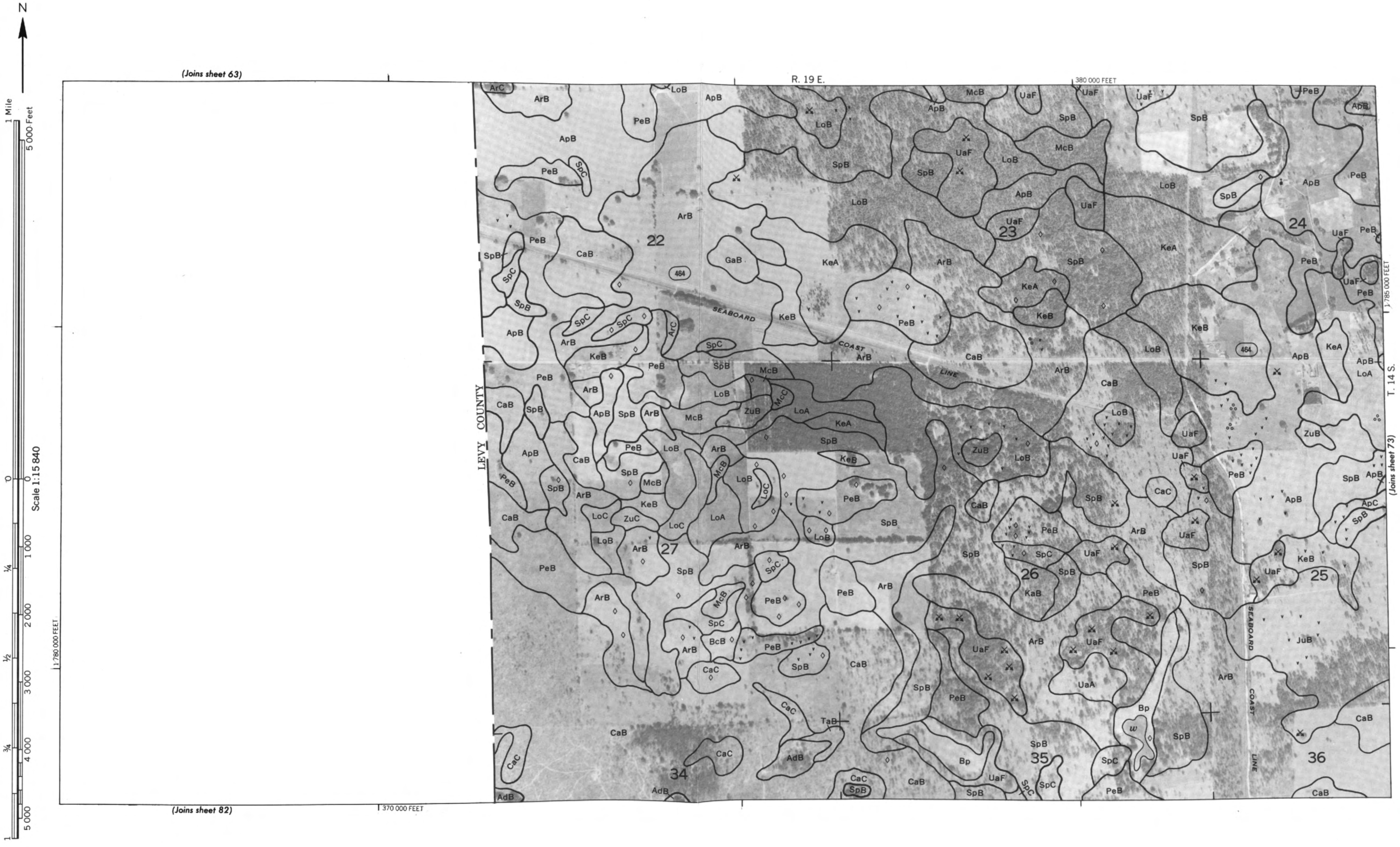

N
(Joins sheet 61)
R. 23 E.
510 000 FEET
1 795 000 FEET
T. 14 S.
(Joins sheet 71)
(Joins sheet 69)
(Joins sheet 79)
500 000 FEET
1 790 000 FEET
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
16
15
14
13
21
22
23
24
315
Strouds Landing
Orange Drain
Turkey Creek
Strouds Creek
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
PROPOSED CROSS FLORIDA BARGE CANAL
OCALA NATIONAL FOREST
Pa
Er
Es
Ea
Ma
Bf
Tc
w

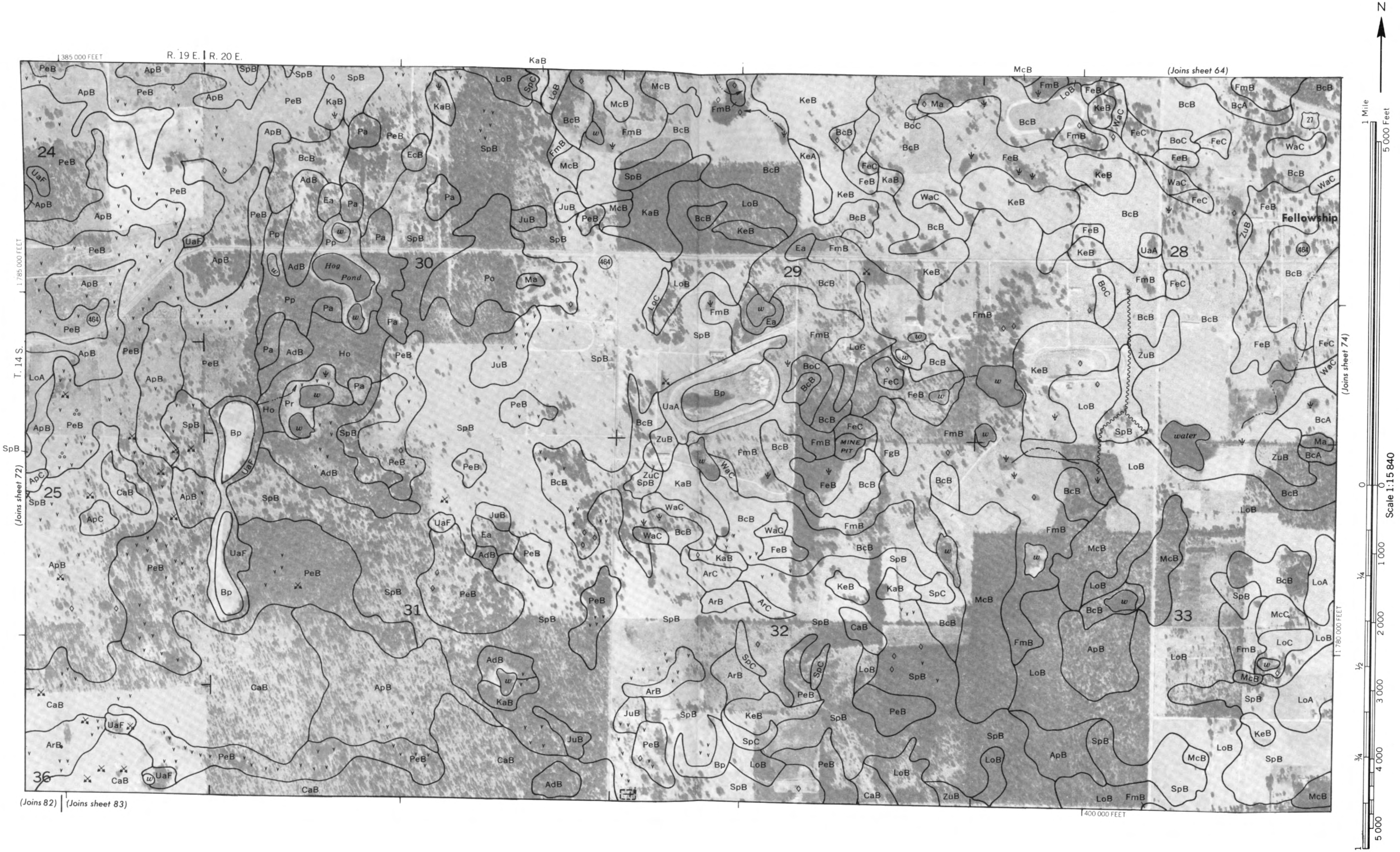
# MARION COUNTY, FLORIDA — SHEET NUMBER 71



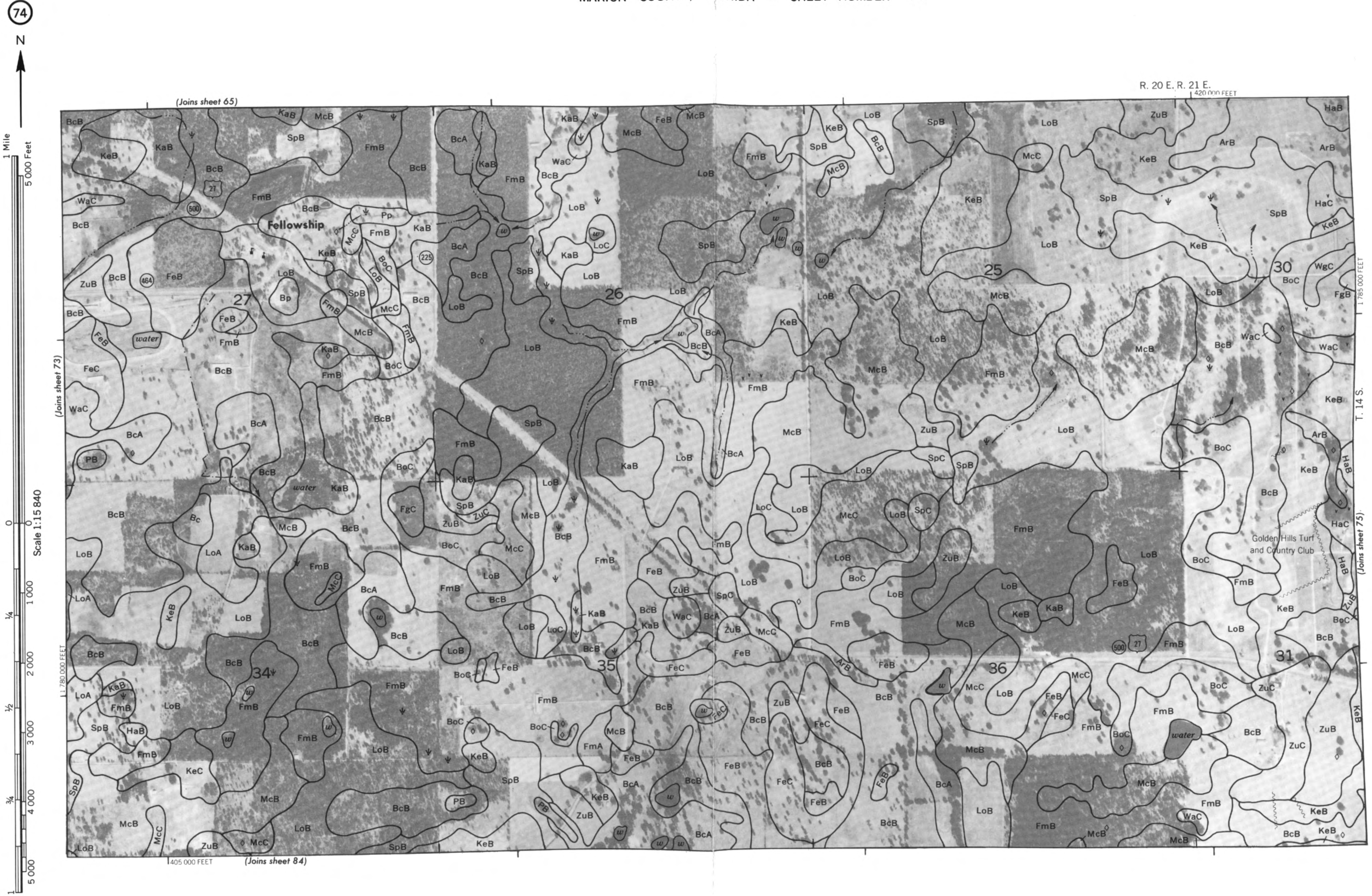
71
N
515 000 FEET
R. 23 E.
R. 24 E.
(Joins sheet 62)
1 795 000 FEET
T. 14 S.
(Joins sheet 70)
1 790 000 FEET
520 000 FEET
Pa
Ho
Bf
AN
Ea
Tc
Daisey Creek
Strouds Creek
FLORIDA BARGE CANAL
PROPOSED CROSS FLORIDA BARGE CANAL
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
13
18
24
OCALA NATIONAL FOREST
533 000 FEET
R. 24 E.
(Joins inset, sheet 89)
1 815 000 FEET
T. 13 S.
(Joins sheet 53)
1 810 000 FEET
535 000 FEET
Pr
Po
Pp
EcB
Ae
Pm
28
27
33
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

# MARION COUNTY, FLORIDA — SHEET NUMBER 72

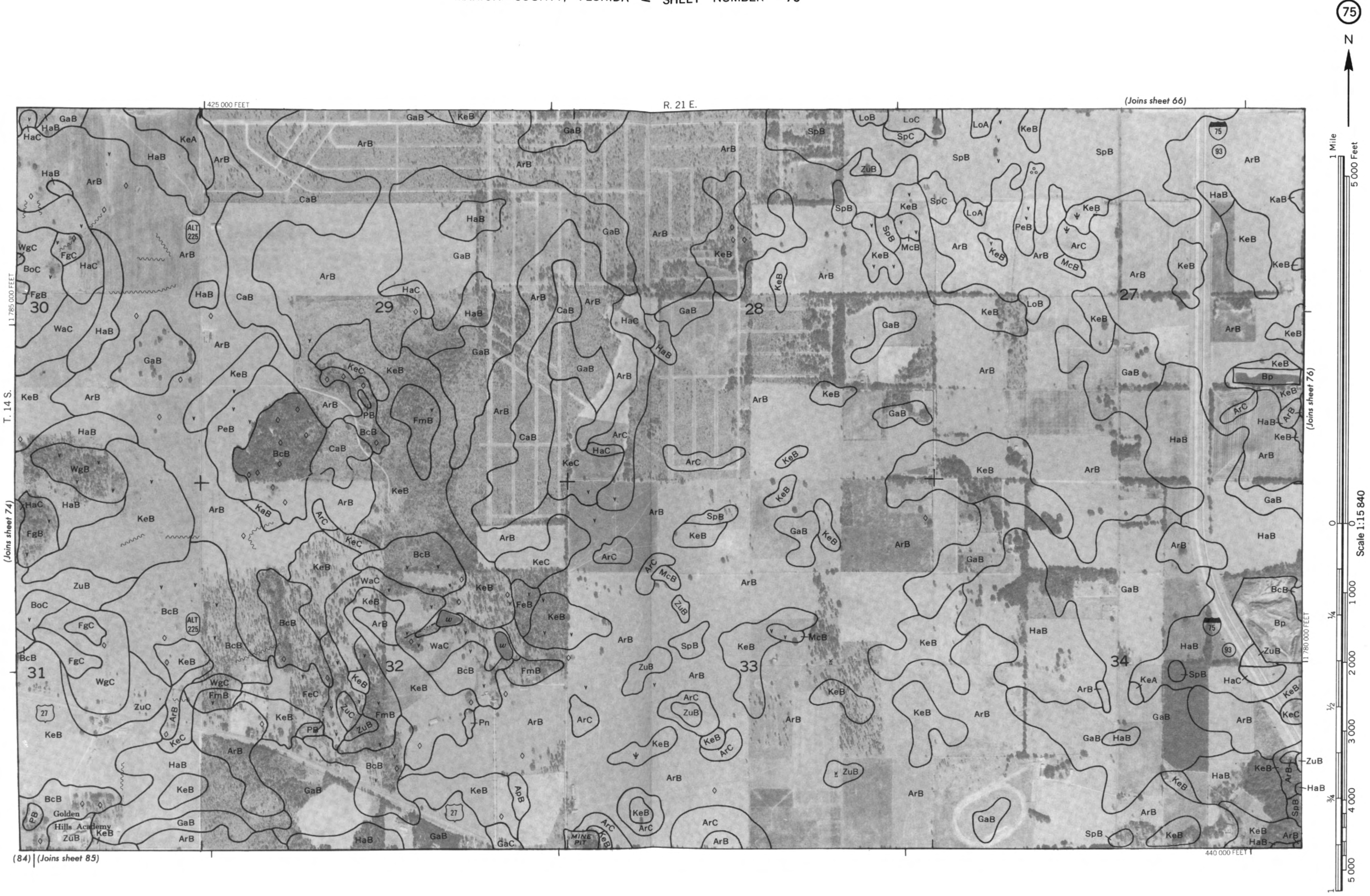

N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
(Joins sheet 63)
R. 19 E.
380 000 FEET
1 785 000 FEET
T. 14 S.
(Joins sheet 73)
1 780 000 FEET
(Joins sheet 82)
370 000 FEET
LEVY COUNTY
SEABOARD COAST LINE
SEABOARD COAST LINE
484
484
22
23
24
25
26
27
34
35
36
ArC
ArB
ApB
PeB
SpC
SpB
CaB
LoB
GaB
KeA
KeB
McB
McC
UaF
ZuB
ZuC
LoA
LoC
SpB
CaC
AdB
TaB
BcB
JuB
KaB
UaA
ApC
Bp
w


N
385 000 FEET
R. 19 E.
R. 20 E.
(Joins sheet 64)
1 785 000 FEET
T. 14 S.
(Joins sheet 72)
(Joins sheet 74)
1 780 000 FEET
400 000 FEET
(Joins 82)
(Joins sheet 83)
24
25
28
29
30
31
32
33
36
Fellowship
Hog Pond
MINE PIT
water
464
27
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000

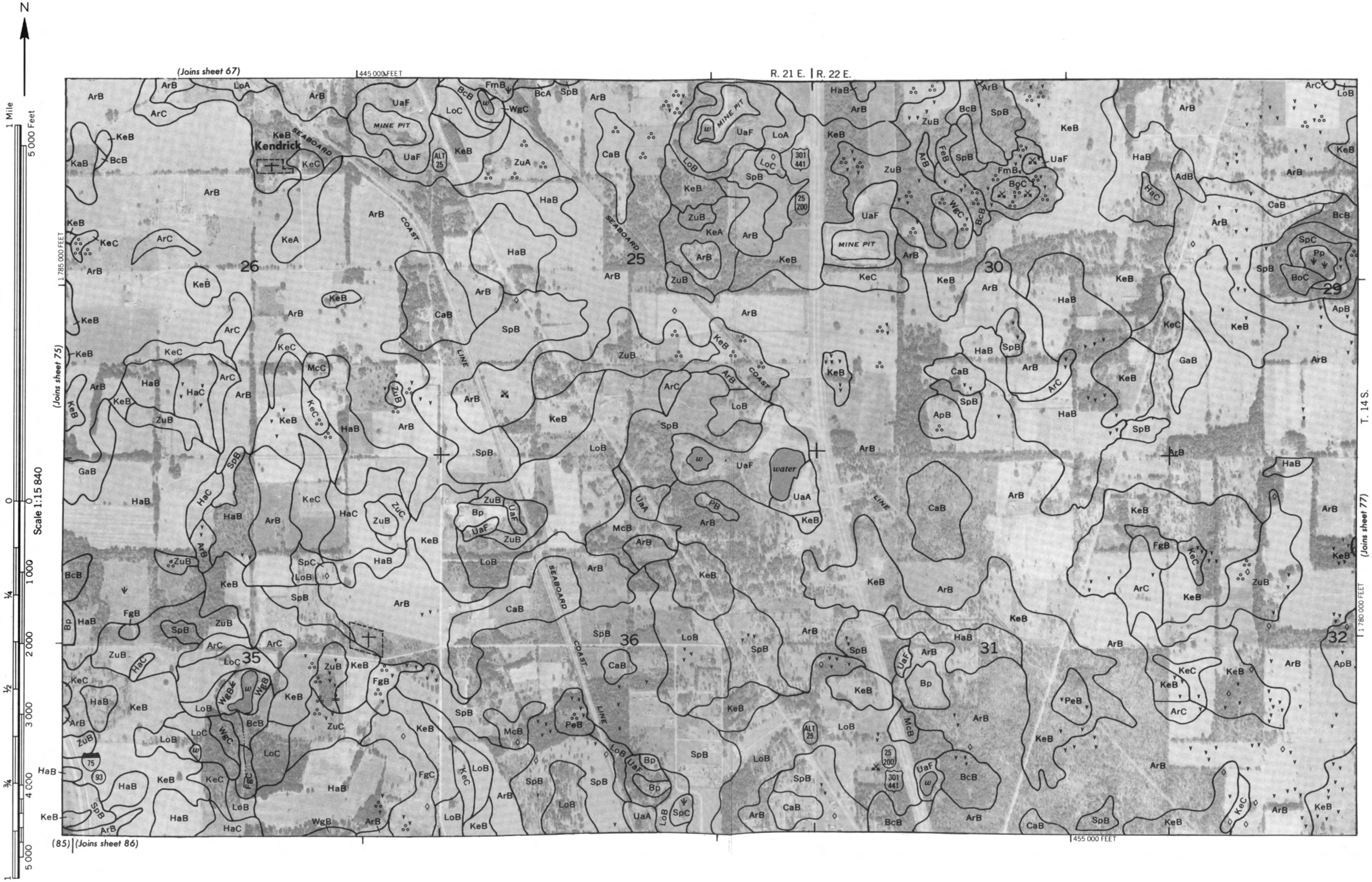
# MARION COUNTY, FLORIDA — SHEET NUMBER 74

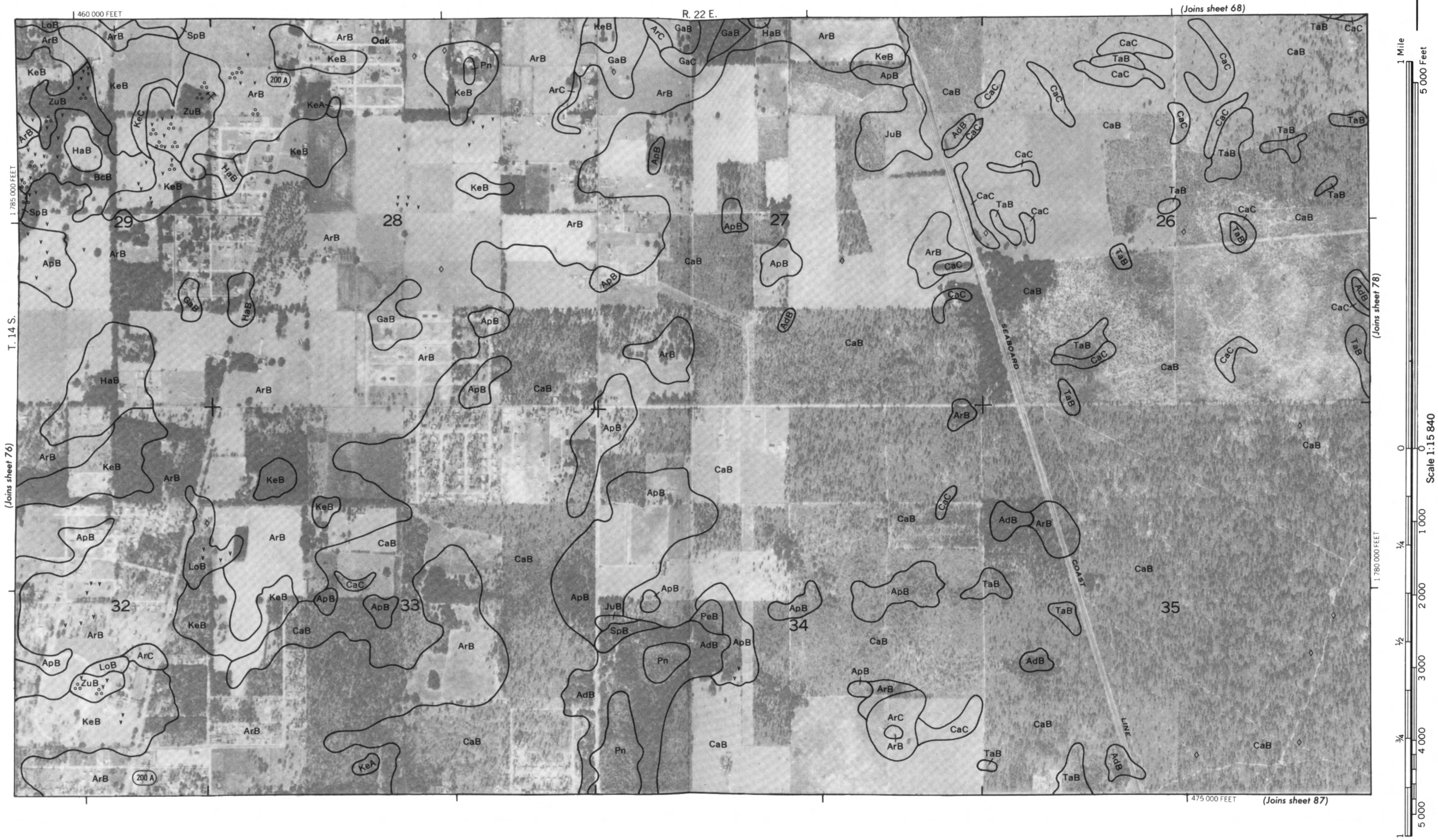

74
N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 65)
(Joins sheet 73)
(Joins sheet 75)
(Joins sheet 84)
R. 20 E. R. 21 E.
420 000 FEET
1 785 000 FEET
T. 14 S.
1 780 000 FEET
405 000 FEET
Fellowship
Golden Hills Turf and Country Club
water
27
26
25
30
34
35
36
31
27
500
225
464
BcB
KaB
McB
SpB
FmB
BcA
KeB
WaC
Pp
McC
BoC
LoB
ZuB
FeB
Bp
FeC
PB
Bc
LoA
KeC
HaB
FgC
ZuC
LoC
SpC
FmA
ArB
HaC
WgC
FgB
McC
FeB
FeC
w
water

# MARION COUNTY, FLORIDA — SHEET NUMBER 75

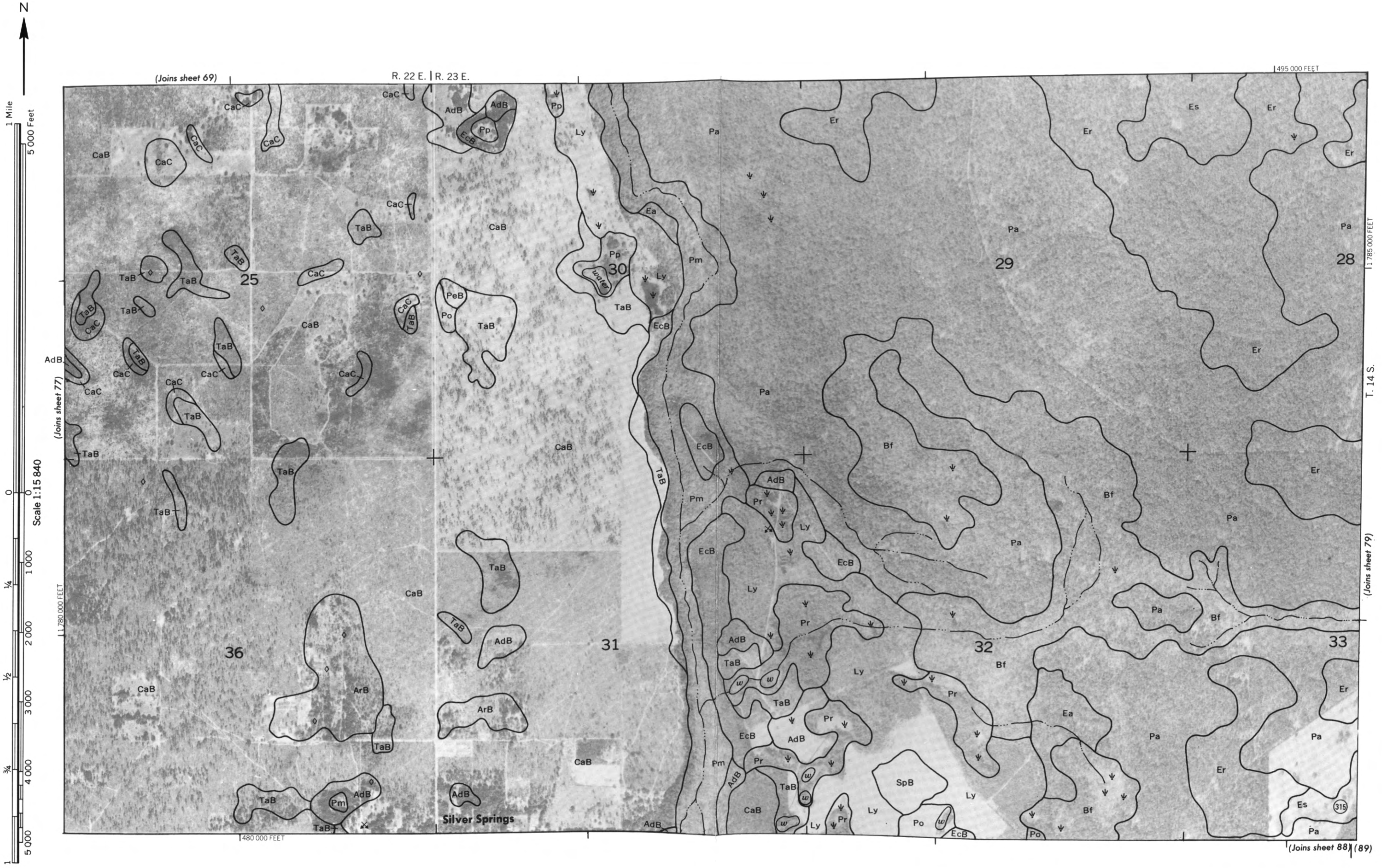

75
N
(Joins sheet 66)
R. 21 E.
425 000 FEET
1 785 000 FEET
T. 14 S.
(Joins sheet 74)
(Joins sheet 76)
1 780 000 FEET
440 000 FEET
(84)
(Joins sheet 85)
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
30
29
28
27
31
32
33
34
ALT 225
27
75
93
Golden Hills Academy
MINE PIT
w
Pn
Bp
ArB
ArC
ApB
BcB
BoC
CaB
FeB
FeC
FgB
FgC
FmB
GaB
GaC
HaB
HaC
KaB
KeA
KeB
KeC
LoA
LoB
LoC
McB
PB
PeB
SpB
SpC
WaC
WgB
WgC
ZuB
ZuC

MARION COUNTY, FLORIDA — SHEET NUMBER 76

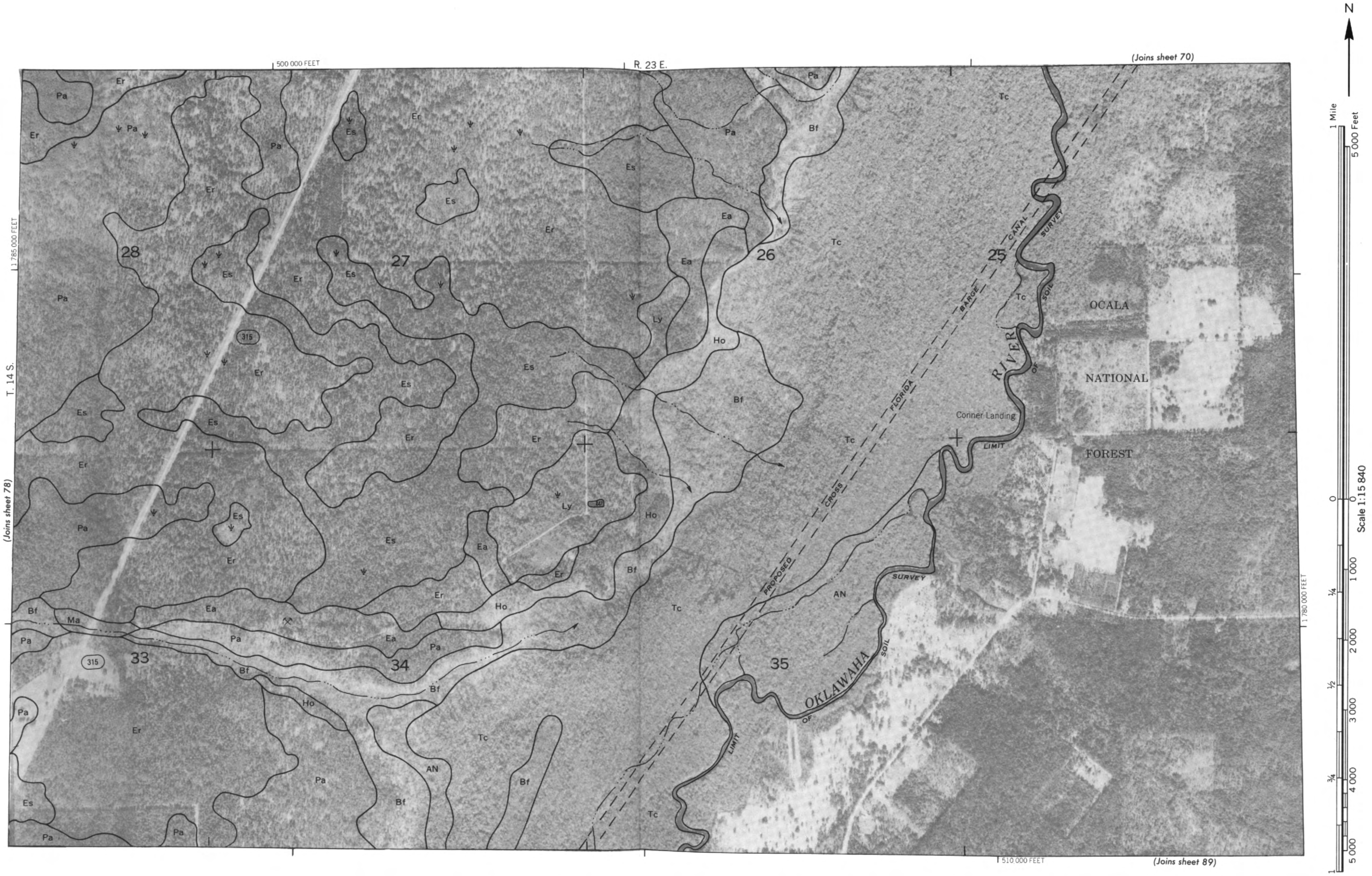

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 67)
445 000 FEET
R. 21 E. | R. 22 E.
(Joins sheet 75)
(Joins sheet 77)
T. 14 S.
1 785 000 FEET
1 780 000 FEET
(85) (Joins sheet 86)
455 000 FEET
Kendrick
SEABOARD COAST LINE
MINE PIT
water
w
ALT 25
301 441
25 200
75
93
26
25
30
29
35
36
31
32
ArB
ArC
LoA
LoB
LoC
KeB
KeC
KeA
KaB
BcB
BcA
SpB
SpC
UaF
UaA
ZuA
ZuB
ZuC
HaB
HaC
CaB
McB
McC
FmB
WgC
WgB
FeB
BoC
Pp
ApB
AdB
GaB
FgB
FgC
PeB
Bp
PB
HaB


N
460 000 FEET
R. 22 E.
(Joins sheet 68)
1 785 000 FEET
T. 14 S.
(Joins sheet 76)
(Joins sheet 78)
1 780 000 FEET
475 000 FEET
(Joins sheet 87)
Oak
200 A
SEABOARD
COAST
LINE
28
29
27
26
32
33
34
35
ArB
KeB
ApB
CaB
CaC
TaB
AdB
HaB
GaB
GaC
ZuB
LoB
SpB
BcB
KeA
KeC
ArC
Pn
JuB
PeB
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1 000
2 000
3 000
4 000
5 000

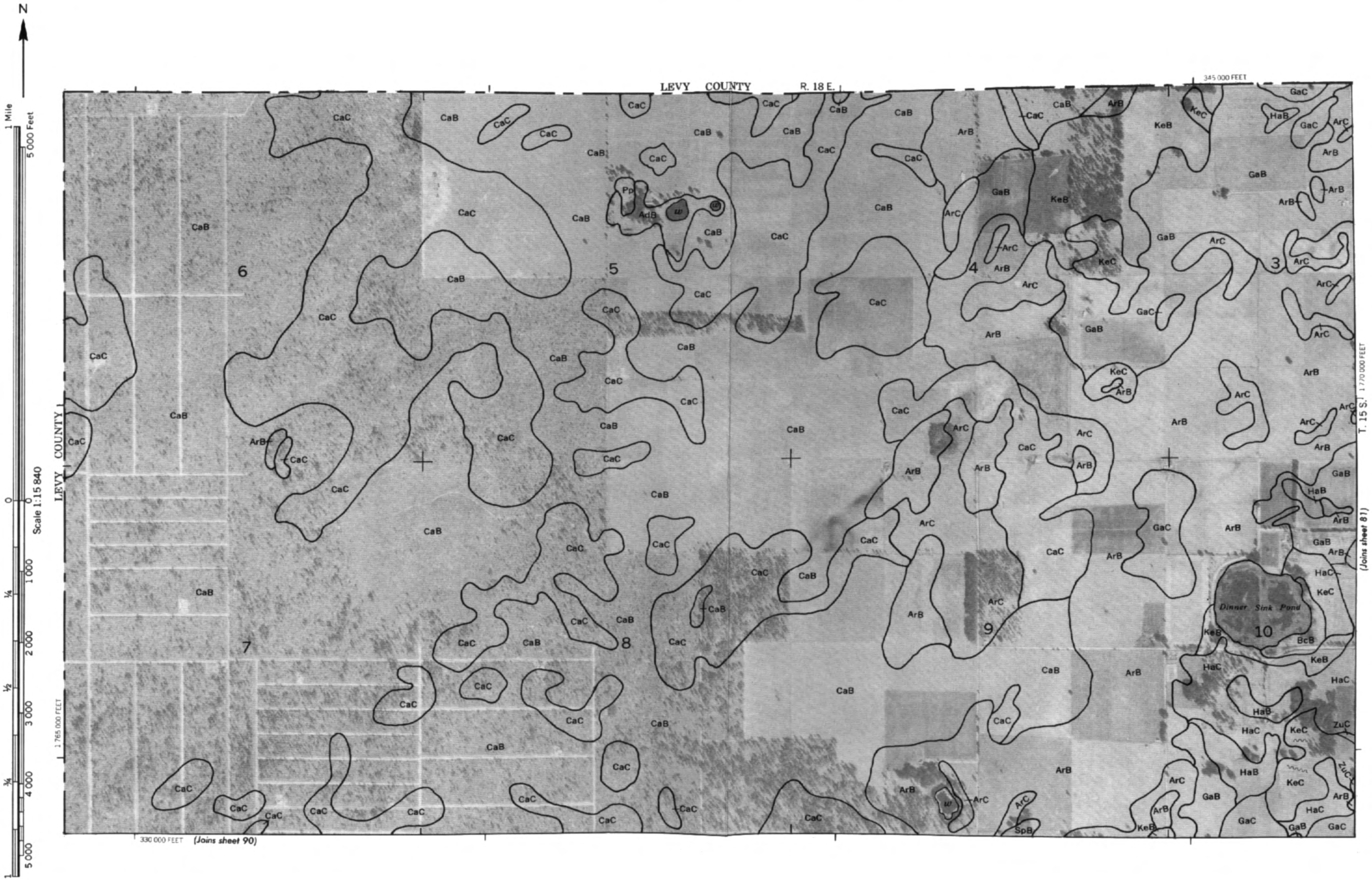
# MARION COUNTY, FLORIDA — SHEET NUMBER 78


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 69)
R. 22 E.
R. 23 E.
495 000 FEET
1 785 000 FEET
T. 14 S.
(Joins sheet 77)
(Joins sheet 79)
1 780 000 FEET
480 000 FEET
(Joins sheet 88)
(89)
25
30
29
28
36
31
32
33
Silver Springs
315
water
CaB
CaC
TaB
AdB
EcB
Pp
PeB
Po
Ly
Ea
Pm
Pa
Er
Es
Bf
Pr
ArB
SpB
CaB
w

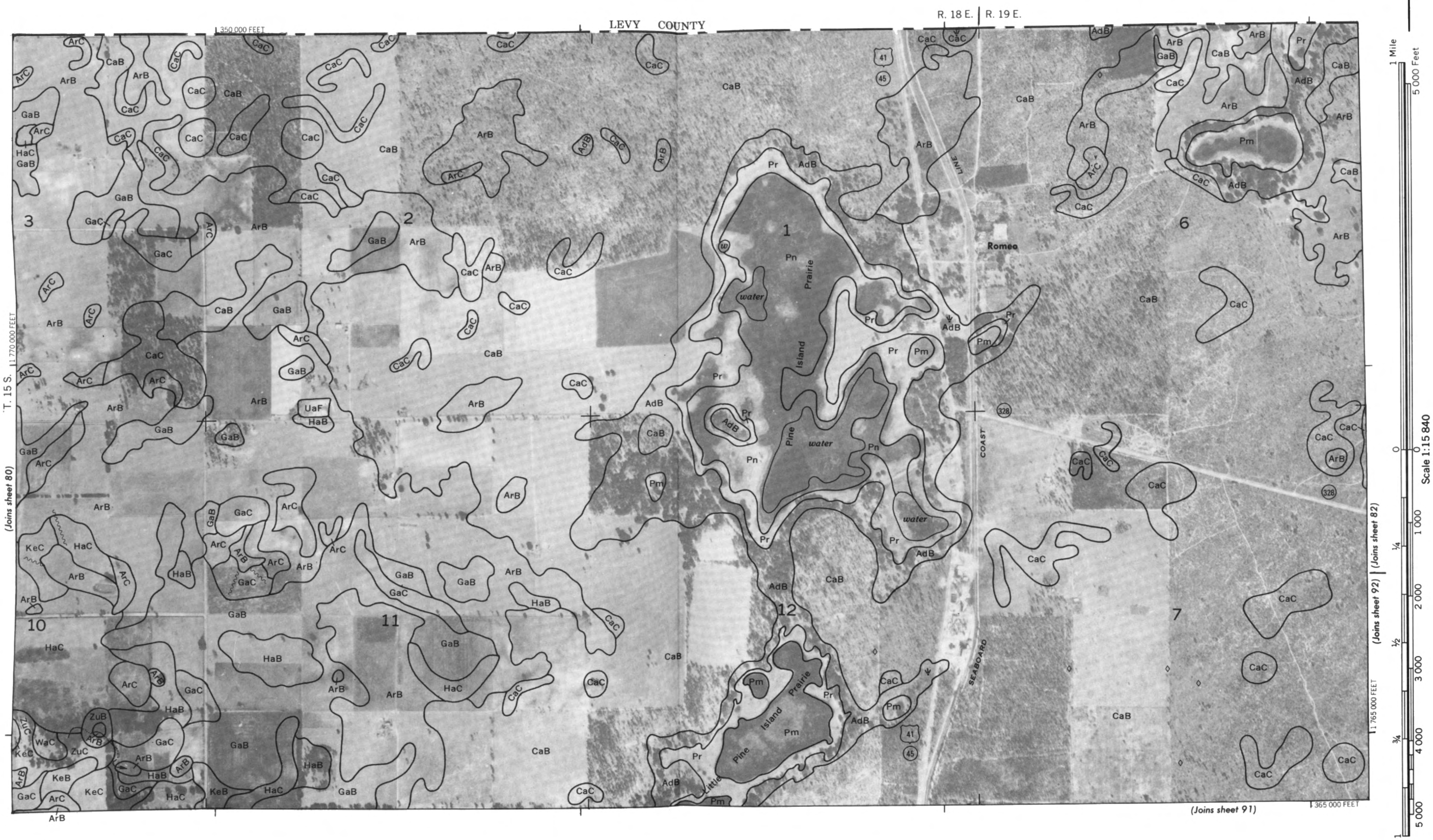
# MARION COUNTY, FLORIDA — SHEET NUMBER 79


N
(Joins sheet 70)
500 000 FEET
R. 23 E.
1 785 000 FEET
T. 14 S.
(Joins sheet 78)
1 780 000 FEET
510 000 FEET
(Joins sheet 89)
28
27
26
25
33
34
35
315
Er
Pa
Es
Ea
Ly
Ho
Bf
Tc
AN
Ma
OCALA
NATIONAL
FOREST
Conner Landing
OKLAWAHA RIVER
PROPOSED CROSS FLORIDA BARGE CANAL
LIMIT OF SOIL SURVEY
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

# MARION COUNTY, FLORIDA — SHEET NUMBER 80

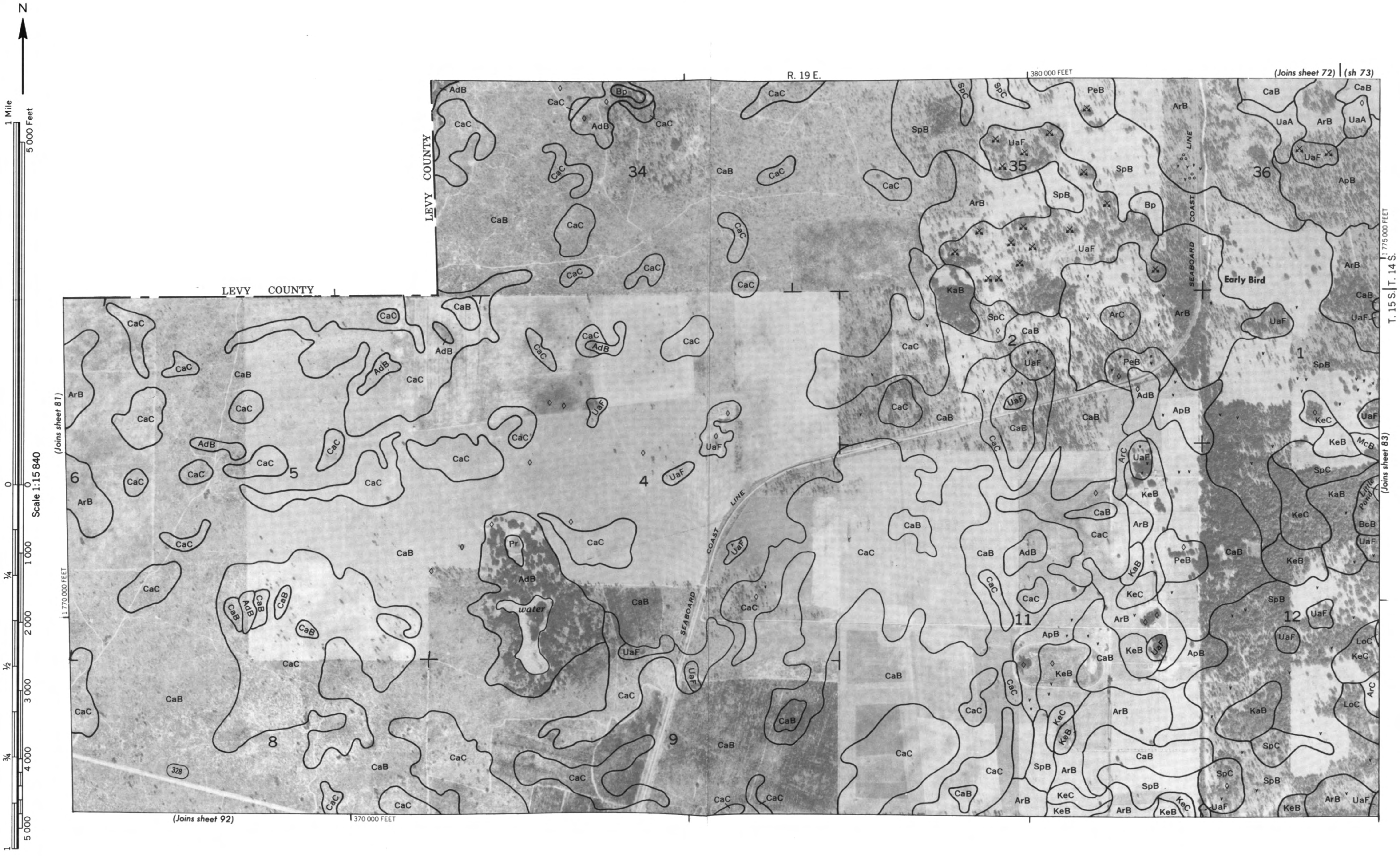

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
LEVY COUNTY
R. 18 E.
345 000 FEET
1 770 000 FEET
T. 15 S.
(Joins sheet 81)
1 765 000 FEET
330 000 FEET
(Joins sheet 90)
LEVY COUNTY
Dinner Sink Pond
3
4
5
6
7
8
9
10
CaC
CaB
CaC
CaC
CaB
CaC
CaB
CaC
CaB
CaB
CaC
ArB
CaB
KeC
KeB
GaC
HaB
GaC
ArC
ArB
ArB
GaB
Pp
AdB
w
CaB
CaC
CaB
GaB
KeB
ArC
ArC
ArB
ArB
KeC
GaB
ArC
ArC
ArC
CaC
ArB
GaC
GaB
ArB
KeC
ArB
ArC
ArC
CaC
ArC
ArB
ArB
ArC
ArB
GaB
HaB
ArB
GaC
ArB
GaB
ArB
HaC
KeC
KeB
BcB
KeB
HaC
HaC
HaB
HaC
KeC
ZuC
HaB
KeC
ZuC
ArB
HaC
GaC
GaB
ArC
ArB
KeB
GaB
GaC
ArB
ArB
ArC
w
SpB
CaC
CaB
CaC
CaB
CaC
ArB
ArC
ArB
CaC
CaC
CaB
CaC
CaB
CaC
CaC
CaC
CaB
CaB
CaC
CaC
CaC
CaB
CaC
CaC
CaB
CaC
CaB
CaC
CaC
CaC
CaB
CaC
CaC
CaC
CaC
CaC
CaC
CaC

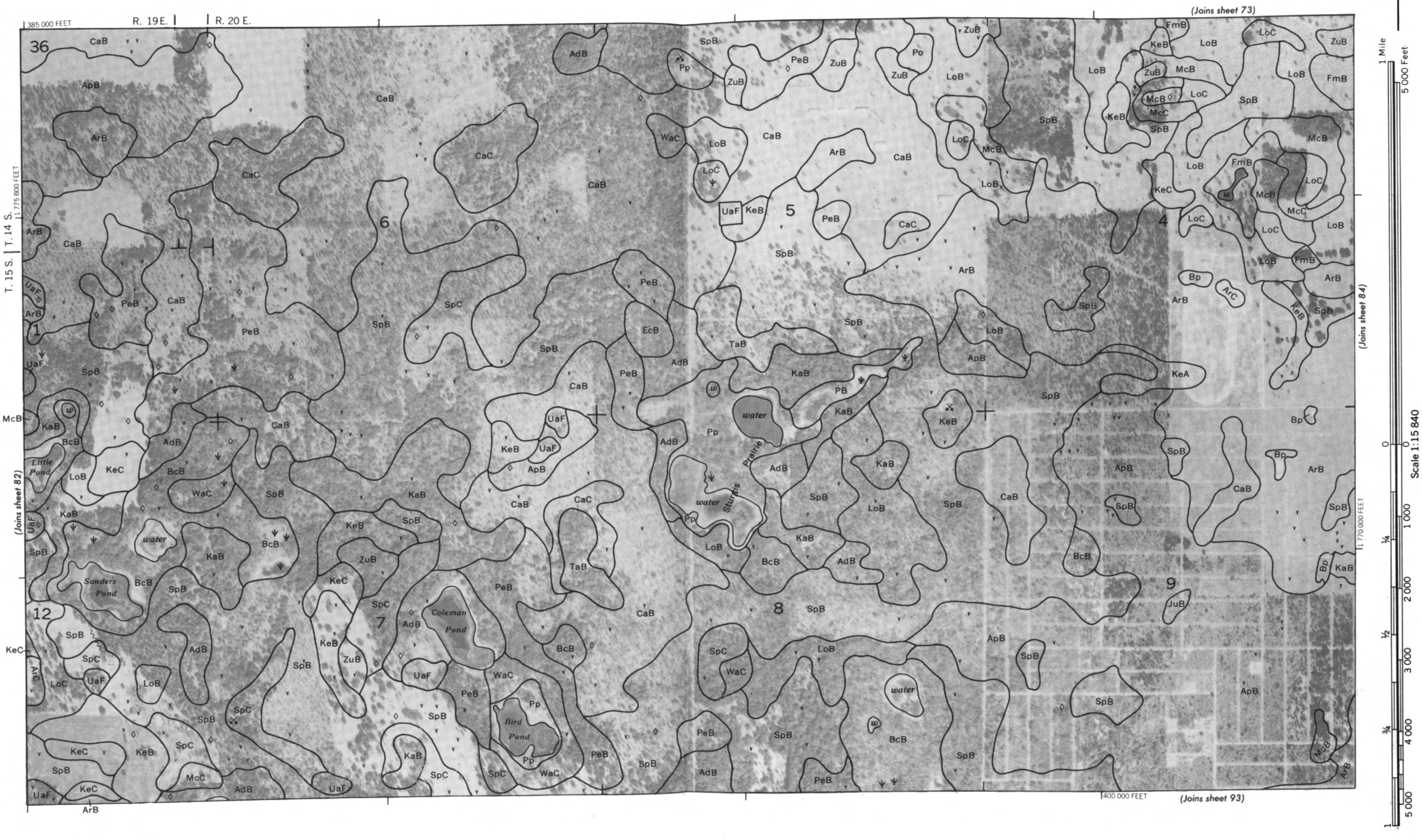
MARION COUNTY, FLORIDA — SHEET NUMBER 81

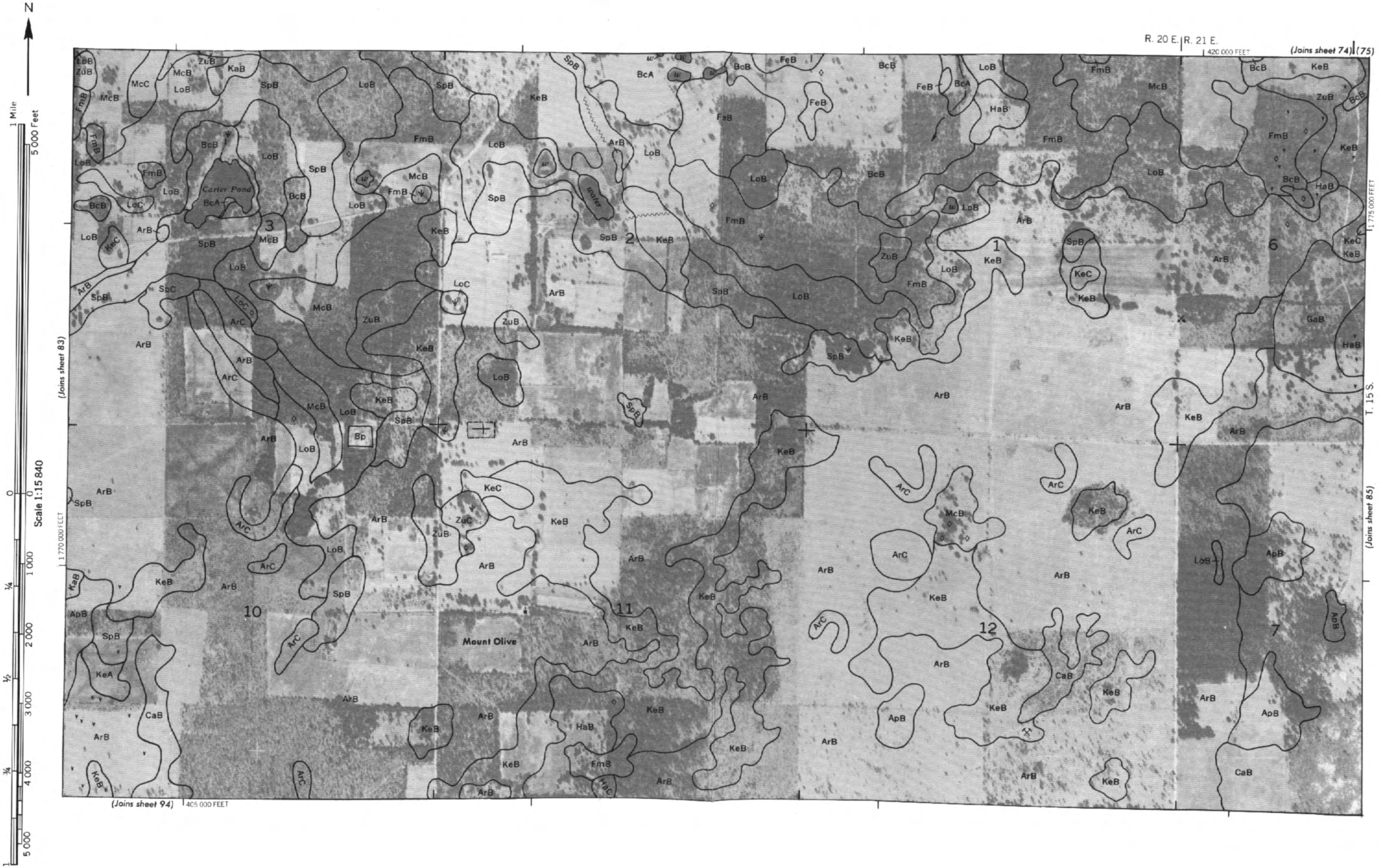

LEVY COUNTY
R. 18 E.
R. 19 E.
T. 15 S.
350 000 FEET
1 770 000 FEET
1 765 000 FEET
365 000 FEET
(Joins sheet 80)
(Joins sheet 82)
(Joins sheet 92)
(Joins sheet 91)
Romeo
Pine Island Prairie
Little Pine Island Prairie
water
LINE
COAST
SEABOARD
41
45
328
1
2
3
6
7
10
11
12
ArB
ArC
AdB
CaB
CaC
GaB
GaC
HaB
HaC
KeB
KeC
Pm
Pn
Pr
UaF
WaC
ZuB
ZuC
N
1 Mile
5 000 Feet
0
1000
2000
3000
4000
5000
¼
½
¾
1
Scale 1:15 840

82

# MARION COUNTY, FLORIDA — SHEET NUMBER 82

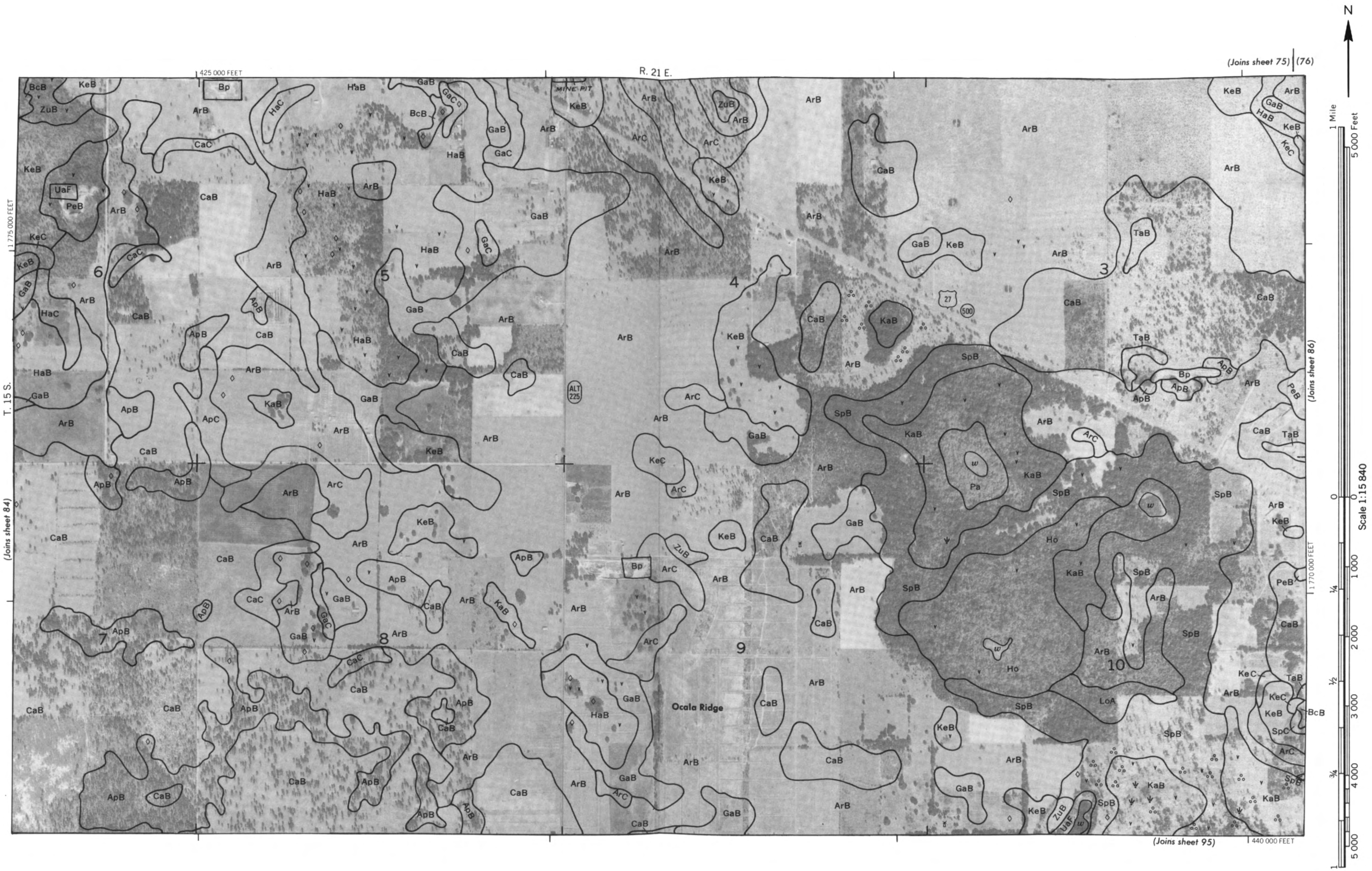

N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
(Joins sheet 72)
(sh 73)
R. 19 E.
380 000 FEET
1 775 000 FEET
T. 14 S.
T. 15 S.
(Joins sheet 83)
(Joins sheet 81)
(Joins sheet 92)
370 000 FEET
1 770 000 FEET
LEVY COUNTY
LEVY COUNTY
SEABOARD COAST LINE
SEABOARD COAST LINE
Early Bird
Little Pond
water
328
34
35
36
1
2
4
5
6
8
9
11
12
AdB
ApB
ArB
ArC
BcB
Bp
CaB
CaC
KaB
KeB
KeC
LoC
McB
PeB
Pr
SpB
SpC
UaA
UaF


N
(Joins sheet 73)
(Joins sheet 84)
(Joins sheet 93)
(Joins sheet 82)
385 000 FEET
400 000 FEET
1 775 000 FEET
1 770 000 FEET
R. 19 E.
R. 20 E.
T. 15 S.
T. 14 S.
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
1/4
1/2
3/4
1
36
1
12
6
7
5
8
4
9
Little Pond
Sanders Pond
Coleman Pond
Bird Pond
Sturgis Prairie
water
w
CaB
ApB
ArB
CaC
AdB
Pp
SpB
PeB
ZuB
Po
LoB
FmB
KeB
LoC
McB
McC
WaC
KeC
UaF
EcB
TaB
KaB
PB
BcB
SpC
CaC
KeA
Bp
ArC
JuB
ApB
McB
KaB
KeC
ArC
LoC
LoB
SpC
ZuB
McC


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
R. 20 E.
R. 21 E.
420 000 FEET
(Joins sheet 74)
(75)
1 775 000 FEET
T. 15 S.
(Joins sheet 85)
(Joins sheet 83)
1 770 000 FEET
(Joins sheet 94)
405 000 FEET
Carter Pond
Mount Olive
water
1
2
3
6
7
10
11
12
ArB
ArC
ApB
BcA
BcB
Bp
CaB
FeB
FmB
GaB
HaB
HaC
KaB
KeA
KeB
KeC
LoB
LoC
McB
McC
SpB
SpC
ZuB
ZuC
w

MARION COUNTY, FLORIDA — SHEET NUMBER 85

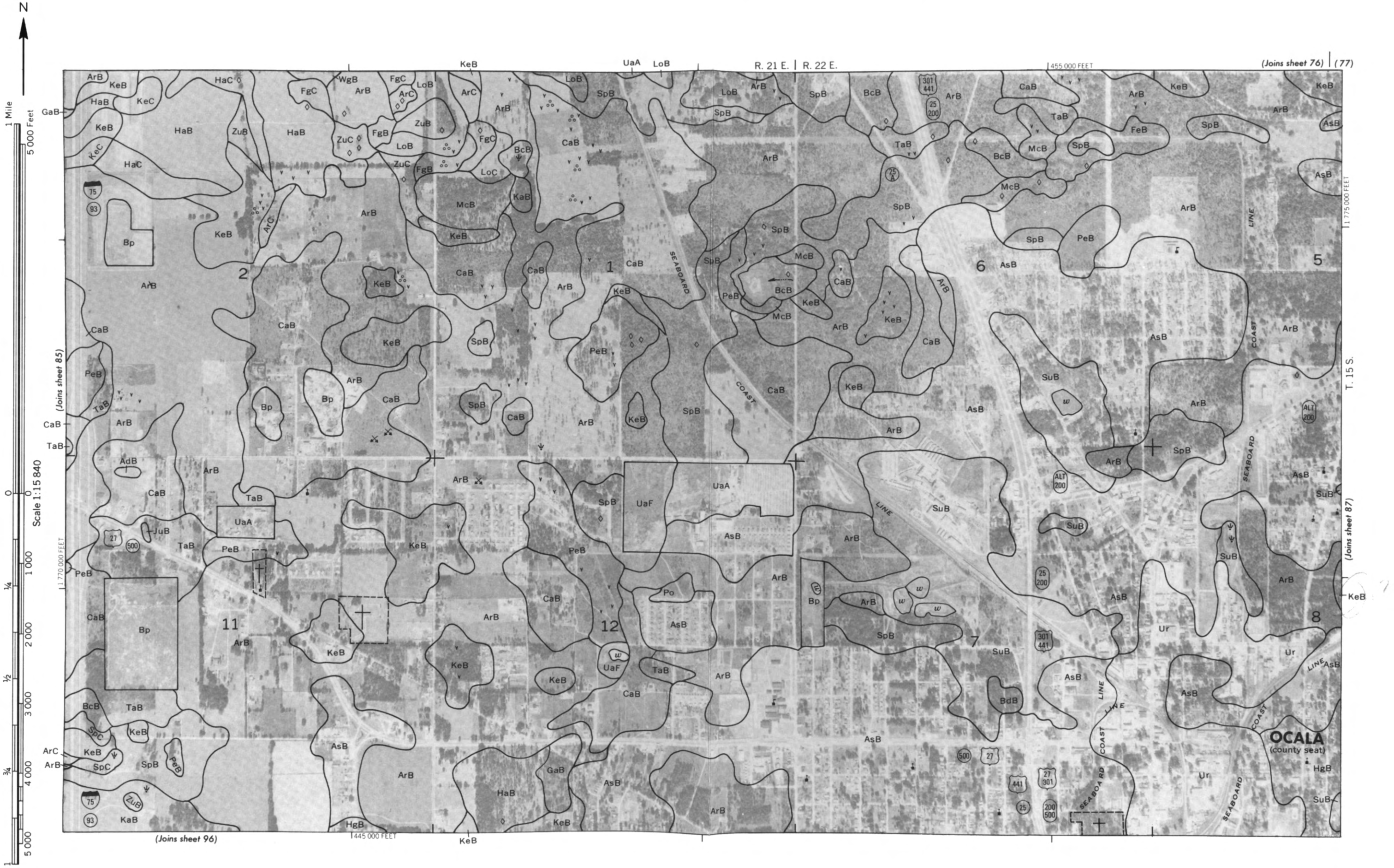
85



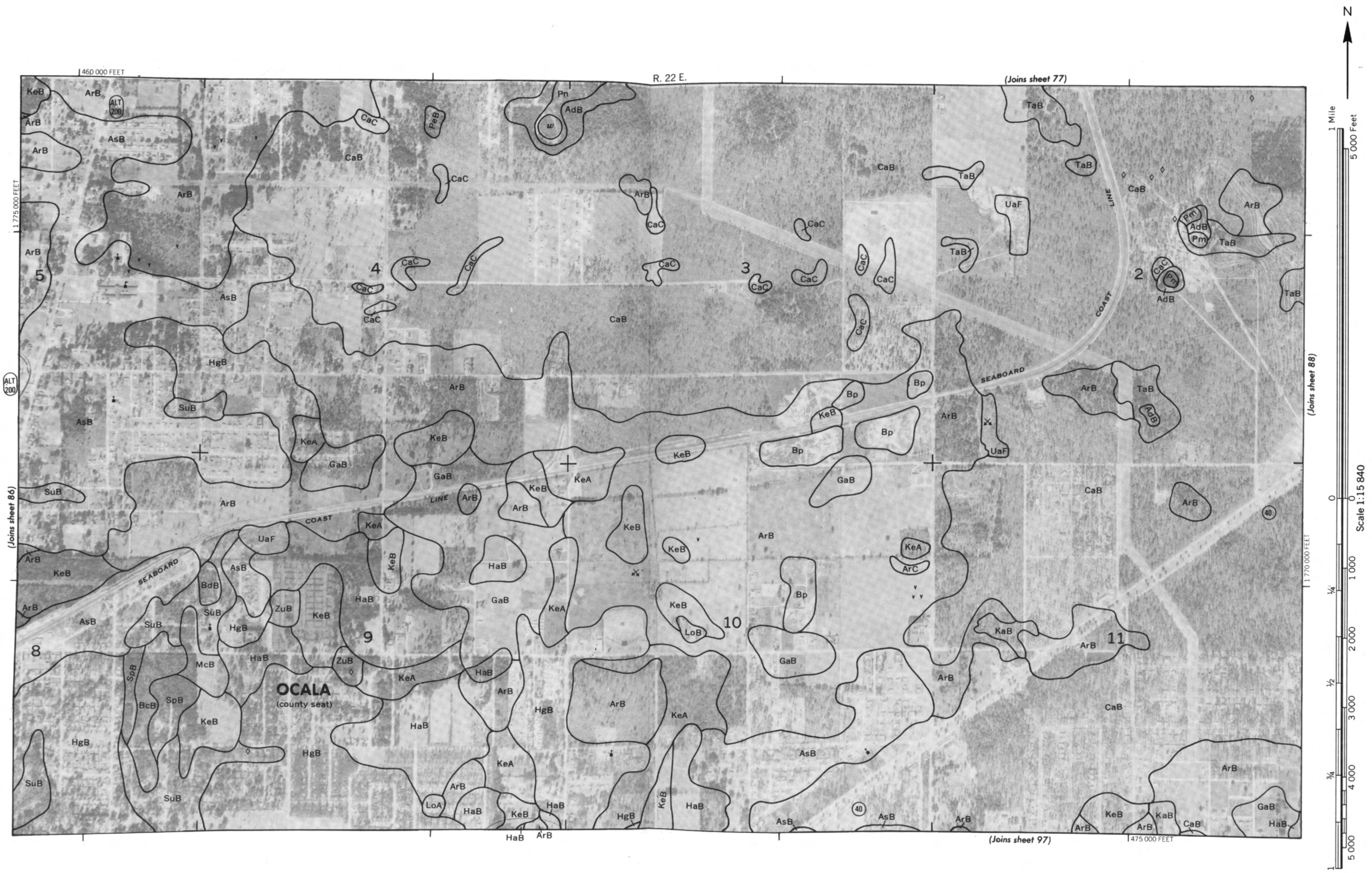
N
(Joins sheet 75)
(76)
R. 21 E.
425 000 FEET
1 775 000 FEET
T. 15 S.
(Joins sheet 84)
(Joins sheet 86)
(Joins sheet 95)
1 770 000 FEET
440 000 FEET
MINE PIT
Ocala Ridge
27
500
ALT 225
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
3
4
5
6
7
8
9
10
BcB
KeB
ZuB
Bp
HaC
HaB
GaB
GaC
BcB
ArB
CaC
KeC
UaF
PeB
CaB
HaB
ArC
TaB
ApB
ApC
KaB
SpB
Pa
Ho
w
LoA
KeC
SpC
ZuB
UaF

(86)

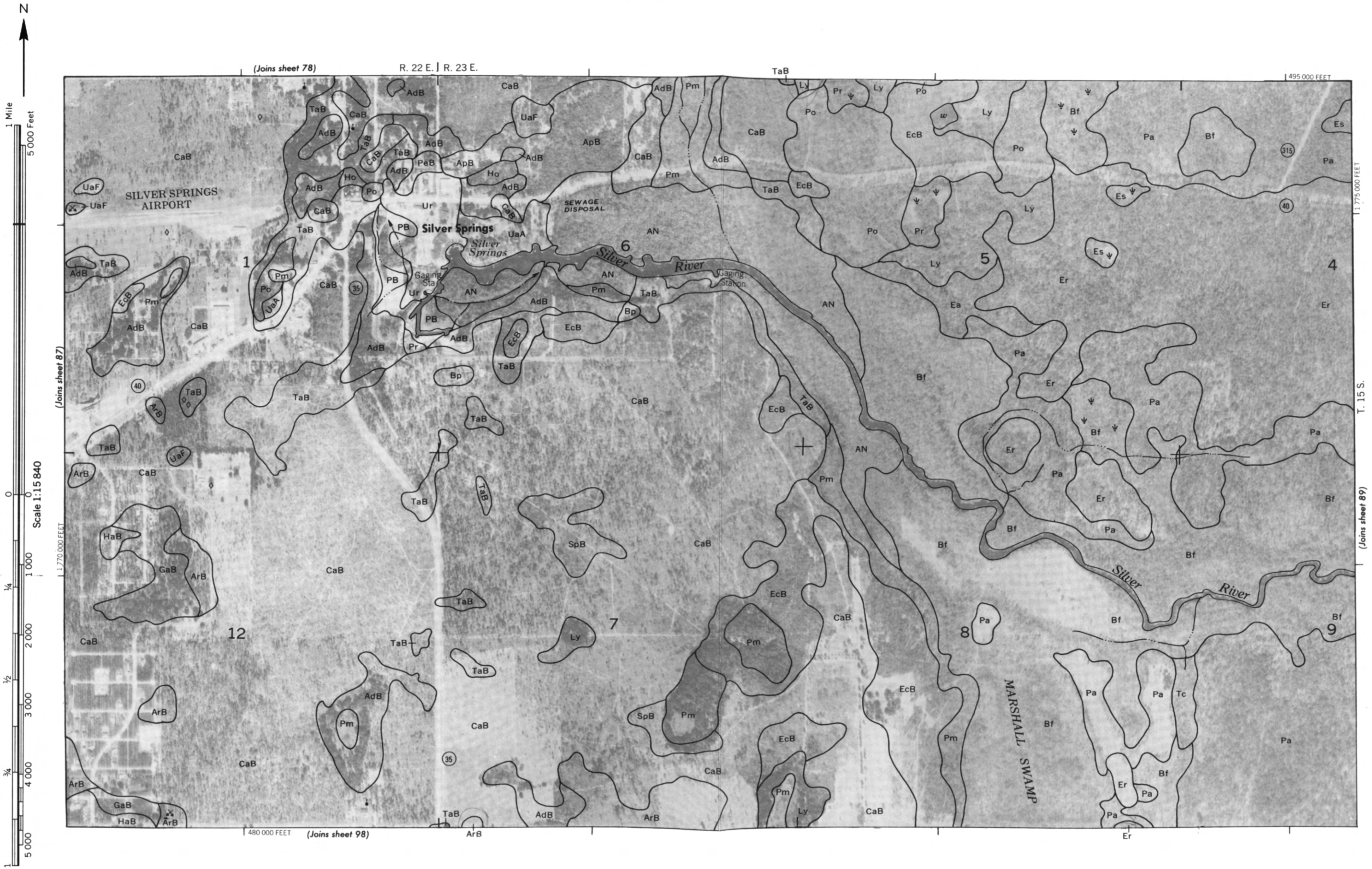
# MARION COUNTY, FLORIDA — SHEET NUMBER 86


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 76)
(77)
R. 21 E.
R. 22 E.
455 000 FEET
445 000 FEET
1 775 000 FEET
1 770 000 FEET
T. 15 S.
(Joins sheet 85)
(Joins sheet 87)
(Joins sheet 96)
SEABOARD
COAST
LINE
SEABOARD COAST LINE
OCALA
(county seat)
1
2
5
6
7
8
11
12
75
93
27
500
301
441
25
200
25A
ALT 200
ArB
KeB
HaC
HaB
KeC
GaB
ZuB
WgB
FgC
ArC
LoB
FgB
ZuC
ZuC
LoC
BcB
KaB
McB
CaB
SpB
UaA
Bp
PeB
TaB
AdB
JuB
UaF
AsB
Po
SuB
Ur
BdB
HgB
HgB
SpC
ArC
GaB
FeB
w

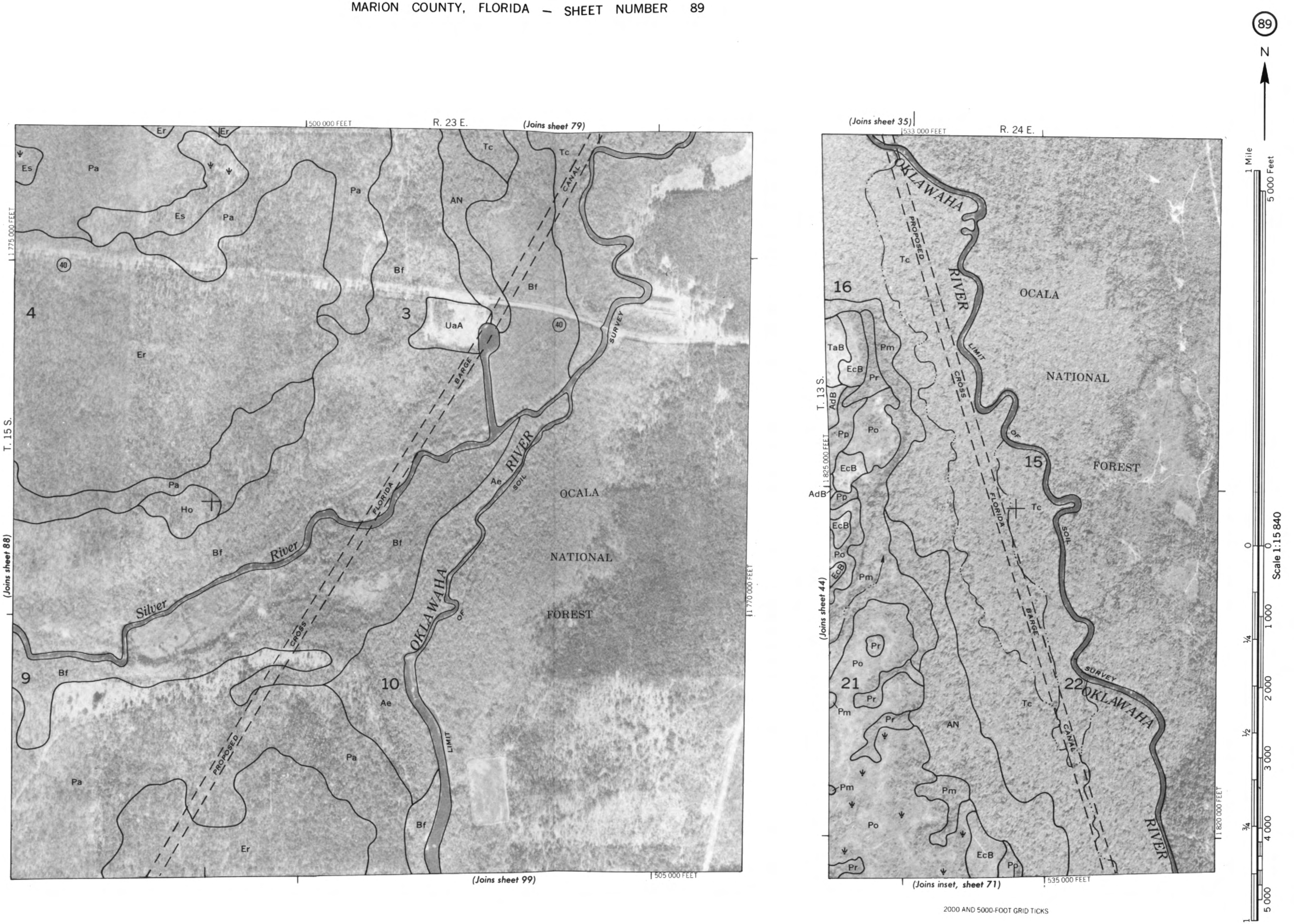
# MARION COUNTY, FLORIDA — SHEET NUMBER 87


N
460 000 FEET
R. 22 E.
(Joins sheet 77)
(Joins sheet 86)
(Joins sheet 88)
(Joins sheet 97)
475 000 FEET
1 775 000 FEET
1 770 000 FEET
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840
OCALA
(county seat)
SEABOARD
COAST
LINE
ALT 200
40
2
3
4
5
8
9
10
11
KeB
ArB
AsB
CaB
CaC
PeB
Pn
AdB
w
TaB
UaF
Pm
HgB
SuB
KeA
GaB
Bp
ArC
HaB
BdB
ZuB
McB
SpB
BcB
LoA
LoB
KaB

MARION COUNTY, FLORIDA — SHEET NUMBER 88

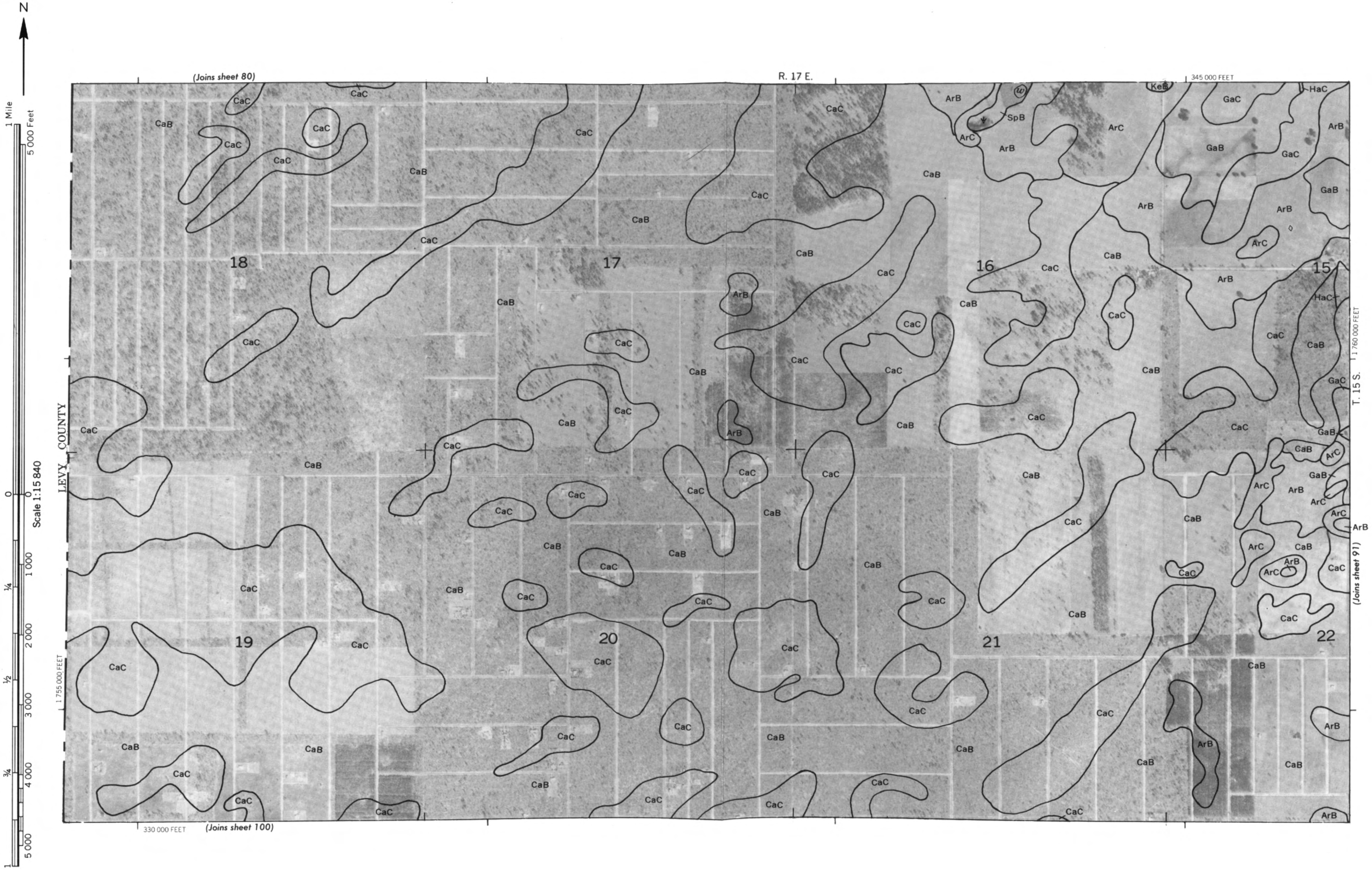

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
(Joins sheet 78)
R. 22 E.
R. 23 E.
495 000 FEET
1 775 000 FEET
T. 15 S.
(Joins sheet 89)
(Joins sheet 98)
480 000 FEET
(Joins sheet 87)
1 770 000 FEET
SILVER SPRINGS AIRPORT
Silver Springs
Silver Springs
Gaging Sta
Gaging Station
SEWAGE DISPOSAL
Silver River
Silver River
MARSHALL SWAMP
1
4
5
6
7
8
9
12
40
35
315
AdB
AN
ApB
ArB
Bf
Bp
CaB
Ea
EcB
Er
Es
GaB
HaB
Ho
Ly
Pa
PB
PeB
Pm
Po
Pr
SpB
TaB
Tc
UaA
UaF
Ur
w

# MARION COUNTY, FLORIDA — SHEET NUMBER 89

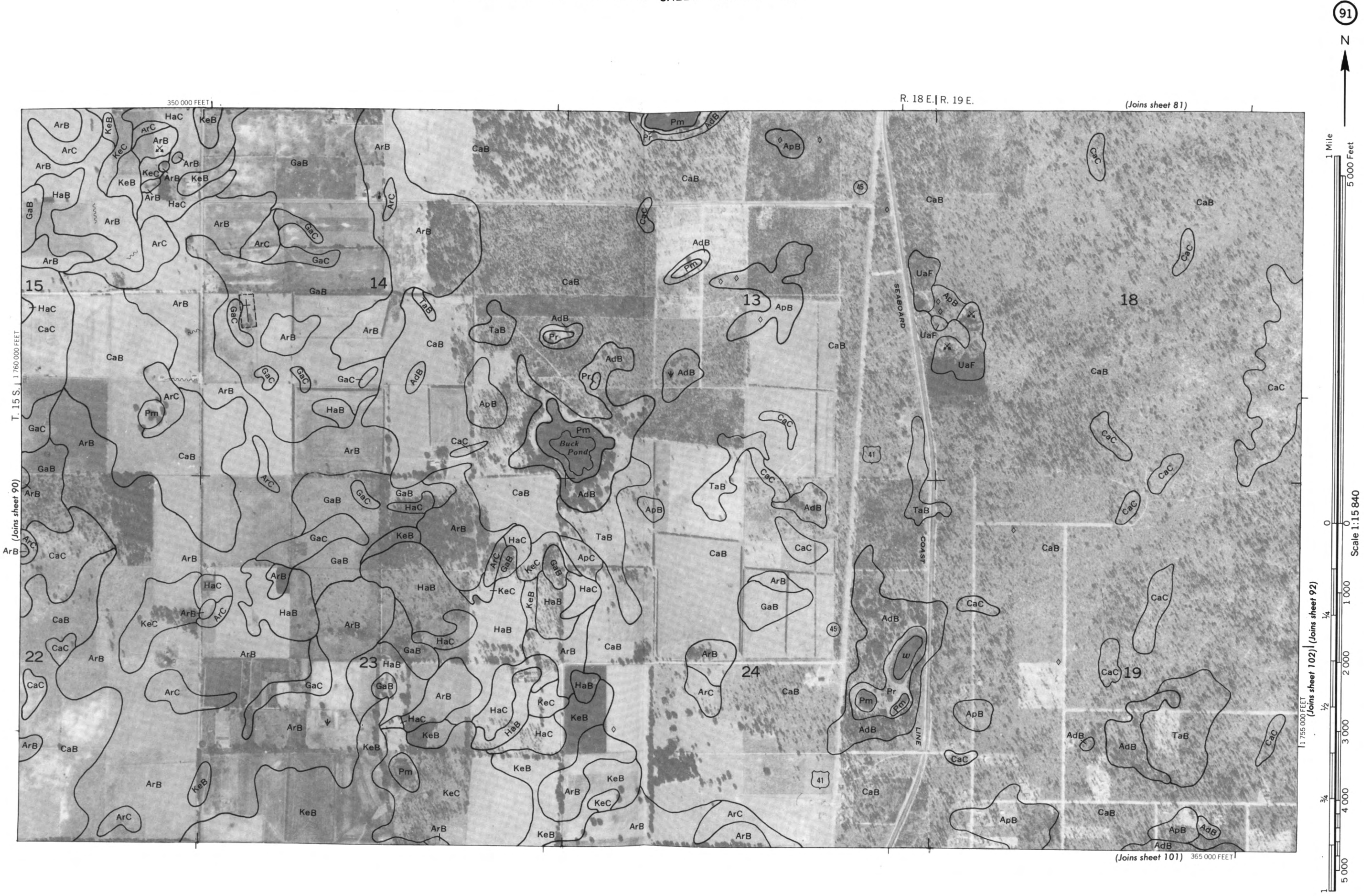

89
N
R. 23 E.
500 000 FEET
(Joins sheet 79)
1 775 000 FEET
T. 15 S.
(Joins sheet 88)
(Joins sheet 99)
505 000 FEET
1 770 000 FEET
Er
Es
Pa
AN
Tc
Bf
Ho
UaA
Ae
40
3
4
9
10
CANAL
BARGE
FLORIDA
CROSS
PROPOSED
Silver
River
OKLAWAHA
RIVER
LIMIT
OF
SOIL
SURVEY
OCALA
NATIONAL
FOREST
(Joins sheet 35)
533 000 FEET
R. 24 E.
T. 13 S.
1 825 000 FEET
(Joins sheet 44)
(Joins inset, sheet 71)
535 000 FEET
1 820 000 FEET
16
15
21
22
TaB
EcB
Pm
Pr
AdB
Pp
Po
2000 AND 5000-FOOT GRID TICKS
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

(90)

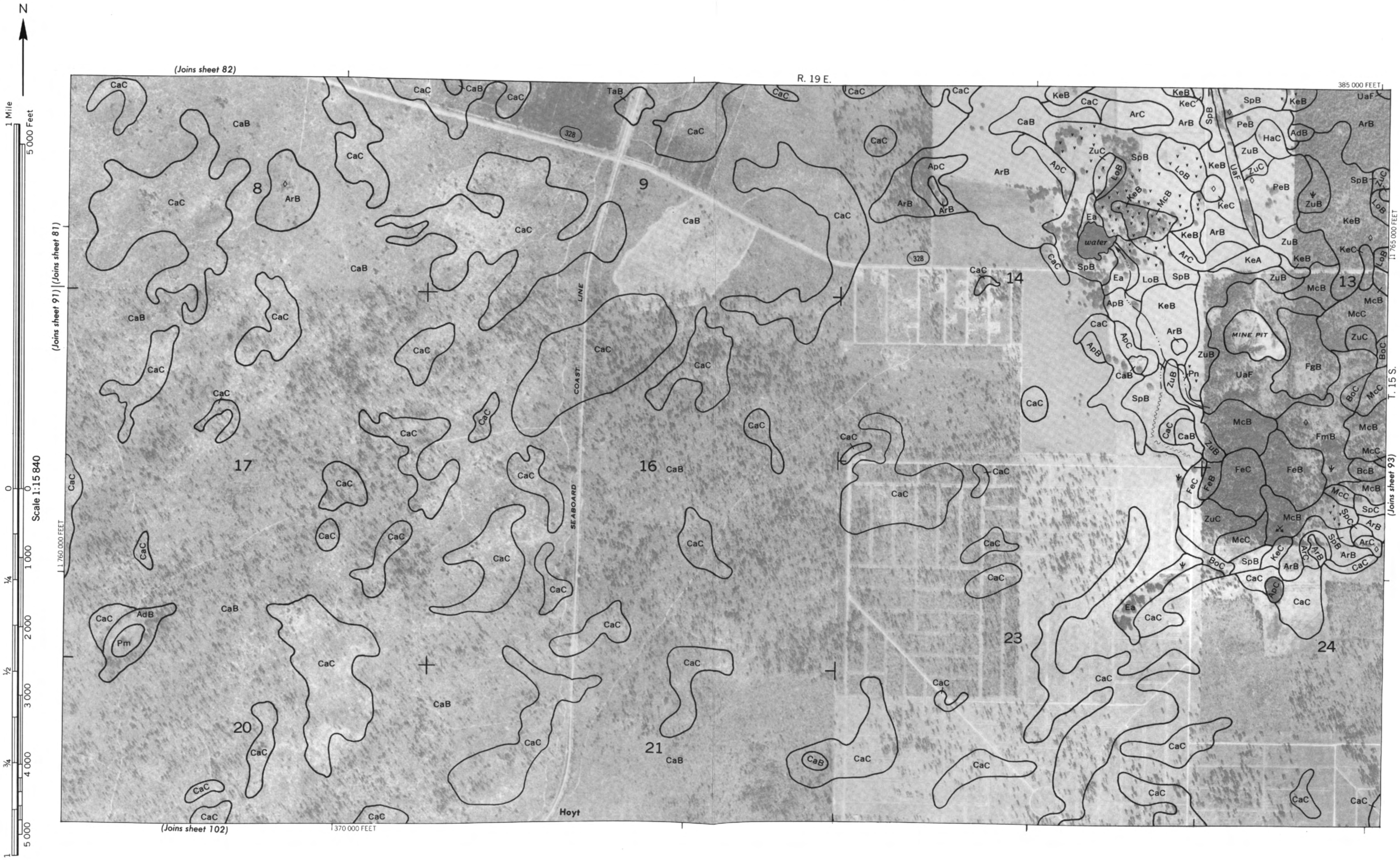
MARION COUNTY, FLORIDA — SHEET NUMBER 90


N
(Joins sheet 80)
R. 17 E.
345 000 FEET
1 760 000 FEET
T. 15 S.
(Joins sheet 91)
(Joins sheet 100)
330 000 FEET
1 755 000 FEET
LEVY COUNTY
18
17
16
15
19
20
21
22
CaB
CaC
ArB
ArC
GaB
GaC
HaC
KeB
SpB
Scale 1:15 840
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000

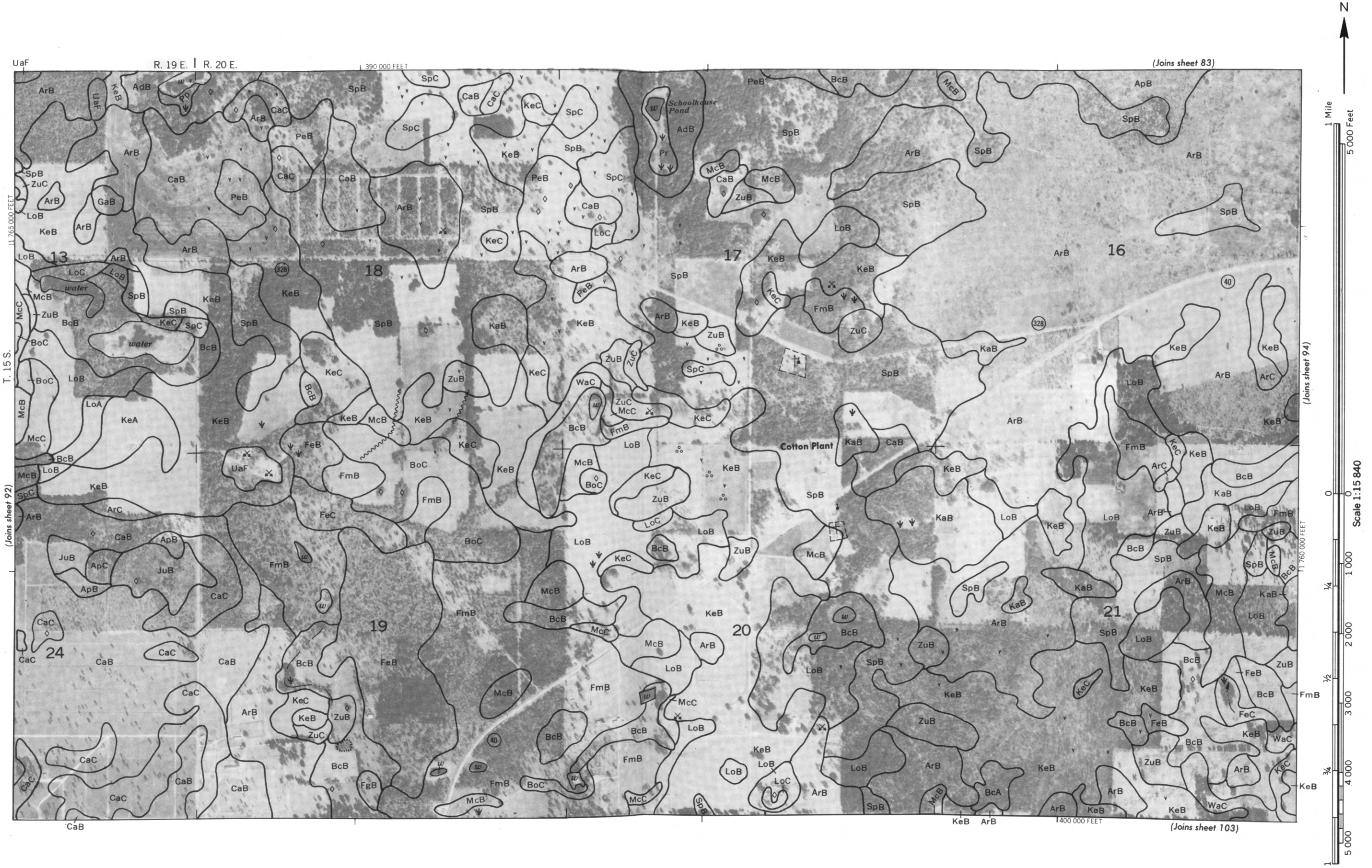
MARION COUNTY, FLORIDA — SHEET NUMBER 91


91
N
350 000 FEET
R. 18 E. | R. 19 E.
(Joins sheet 81)
T. 15 S.
1 760 000 FEET
(Joins sheet 90)
(Joins sheet 102)
(Joins sheet 92)
1 755 000 FEET
(Joins sheet 101)
365 000 FEET
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
15
14
13
18
22
23
24
19
Buck Pond
SEABOARD
COAST
LINE
45
41
ArB
ArC
KeB
KeC
HaC
HaB
GaB
GaC
CaB
CaC
AdB
ApB
ApC
Pm
Pr
TaB
UaF
W

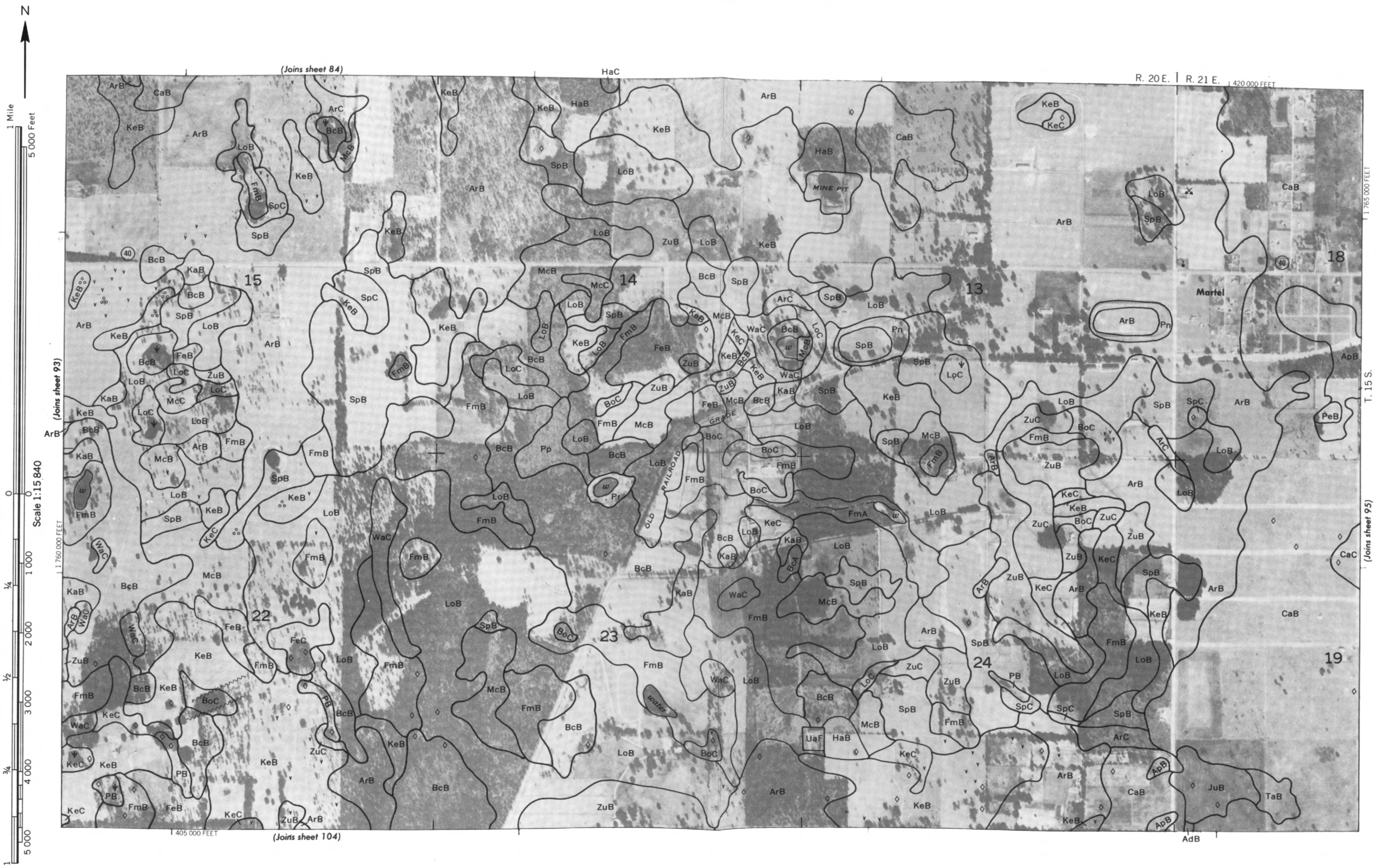
# MARION COUNTY, FLORIDA — SHEET NUMBER 92

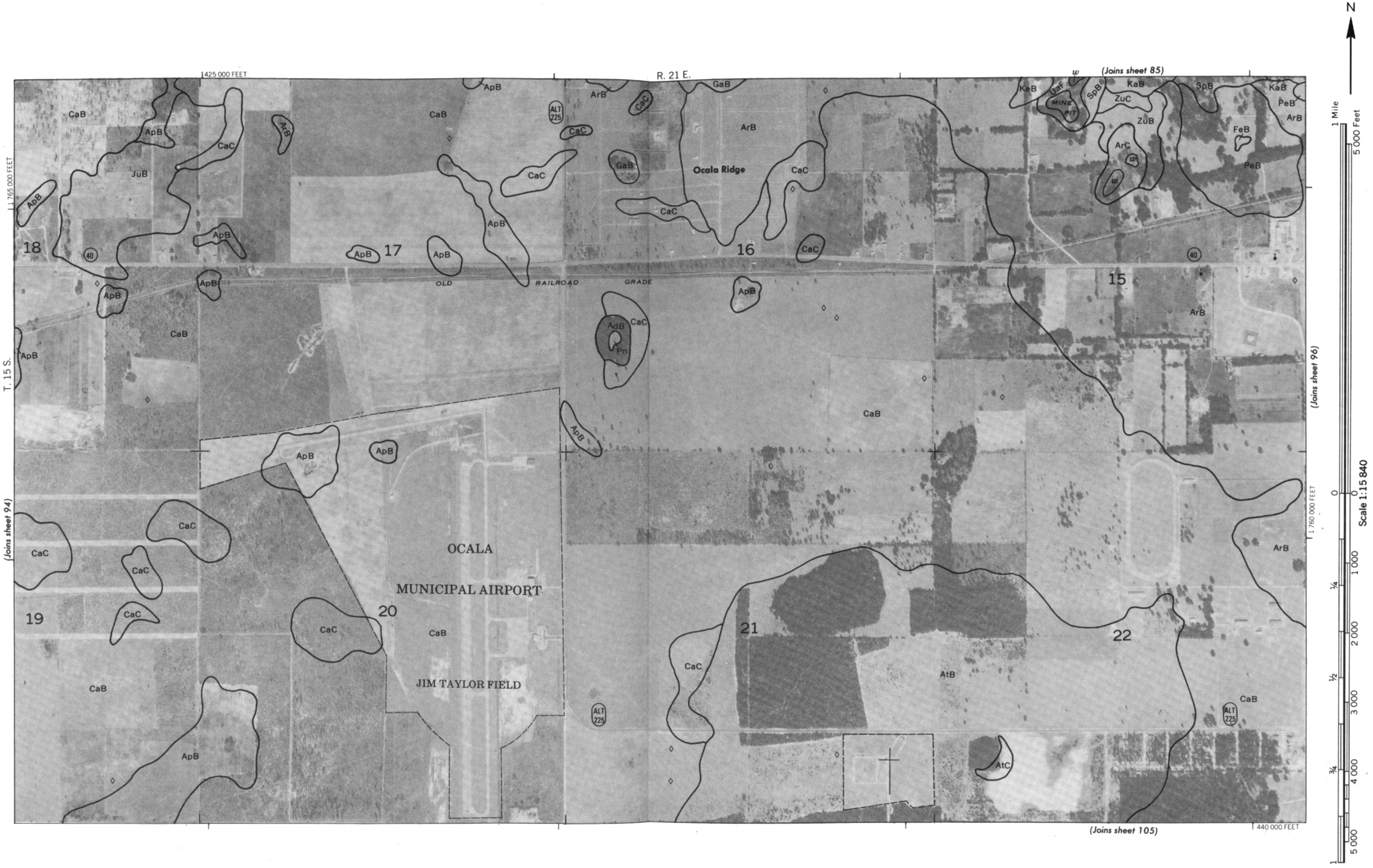

N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840
(Joins sheet 82)
R. 19 E.
385 000 FEET
(Joins sheet 81)
(Joins sheet 91)
(Joins sheet 93)
(Joins sheet 102)
370 000 FEET
1 765 000 FEET
1 760 000 FEET
T. 15 S.
Hoyt
SEABOARD
COAST
LINE
328
8
9
13
14
16
17
20
21
23
24
MINE PIT
water
CaC
CaB
TaB
ArB
ArC
AdB
Pm
ApC
ApB
KeB
KeC
KeA
SpB
SpC
PeB
HaC
ZuC
ZuB
LoB
McB
McC
Ea
UaF
FgB
FmB
FeC
FeB
BoC
BcB
Pn

## MARION COUNTY, FLORIDA — SHEET NUMBER 93

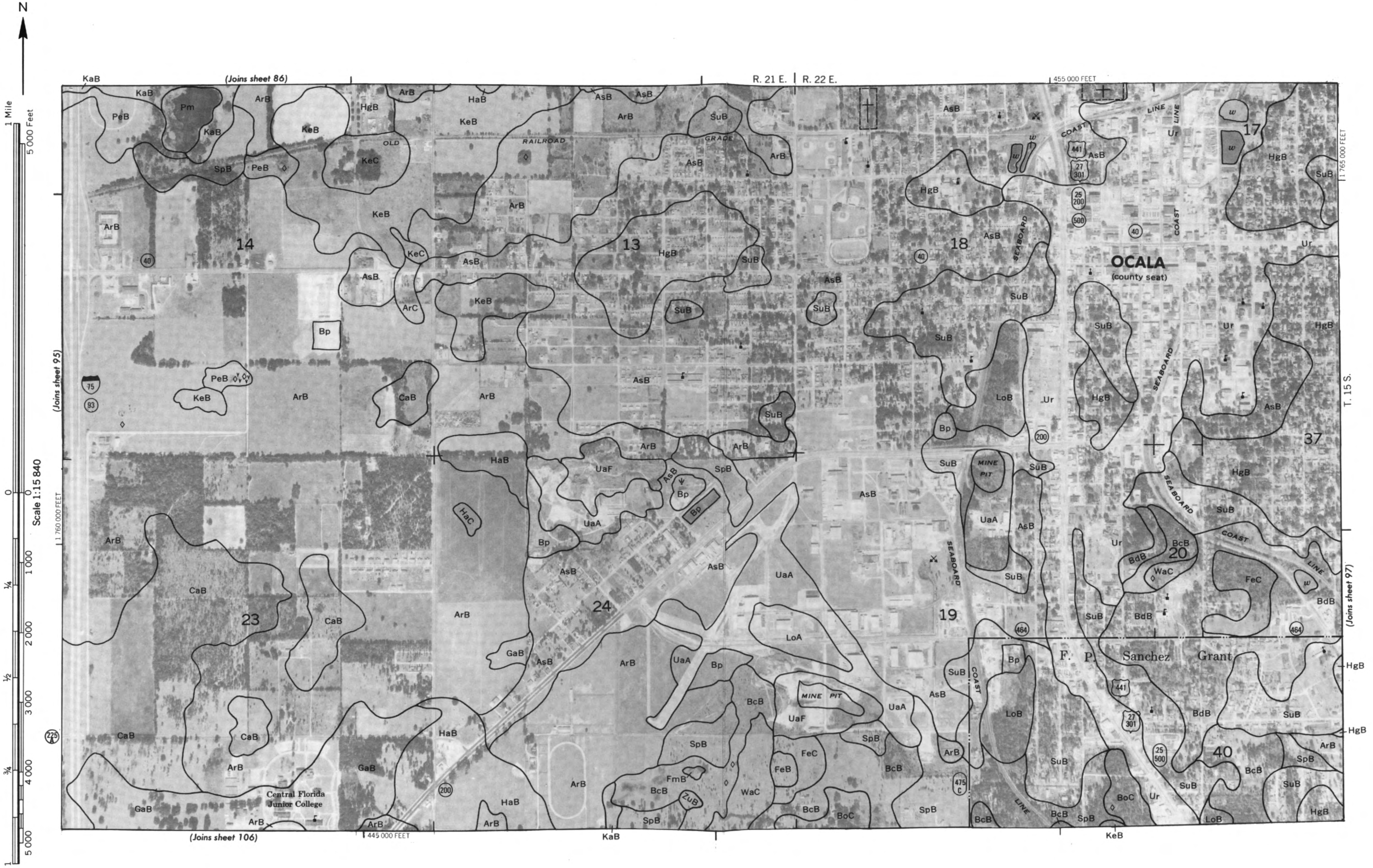

N
R. 19 E.
R. 20 E.
390 000 FEET
(Joins sheet 83)
T. 15 S.
1 765 000 FEET
(Joins sheet 92)
(Joins sheet 94)
1 760 000 FEET
400 000 FEET
(Joins sheet 103)
Schoolhouse Pond
Cotton Plant
water
13
18
17
16
24
19
20
21
328
40
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840
UaF
ArB
KeB
AdB
SpB
SpC
CaB
CaC
PeB
KeC
LoB
GaB
ZuC
McB
McC
BcB
BoC
LoA
KeA
LoC
FeB
FmB
FeC
ArC
JuB
ApC
ApB
CaC
ZuB
WaC
BcA
KaB
Pr
BoC
FgB

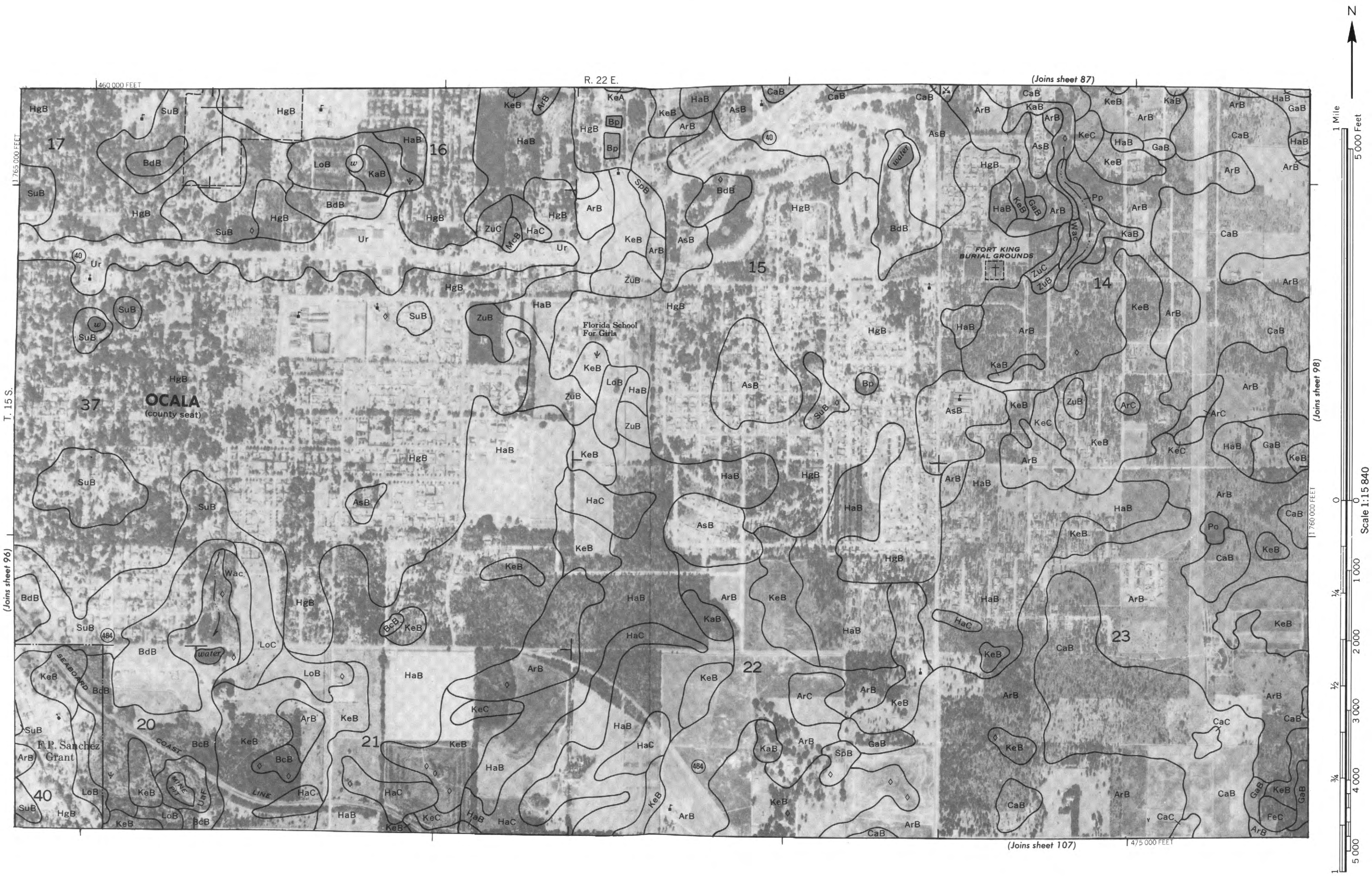
MARION COUNTY, FLORIDA — SHEET NUMBER 94


N
1 Mile
5 000 Feet
Scale 1:15 840
(Joins sheet 84)
(Joins sheet 93)
(Joins sheet 95)
(Joins sheet 104)
R. 20 E.
R. 21 E.
T. 15 S.
420 000 FEET
1 765 000 FEET
1 760 000 FEET
405 000 FEET
15
14
13
18
22
23
24
19
Martel
40
MINE PIT
OLD RAILROAD GRADE
water
HaC
AdB

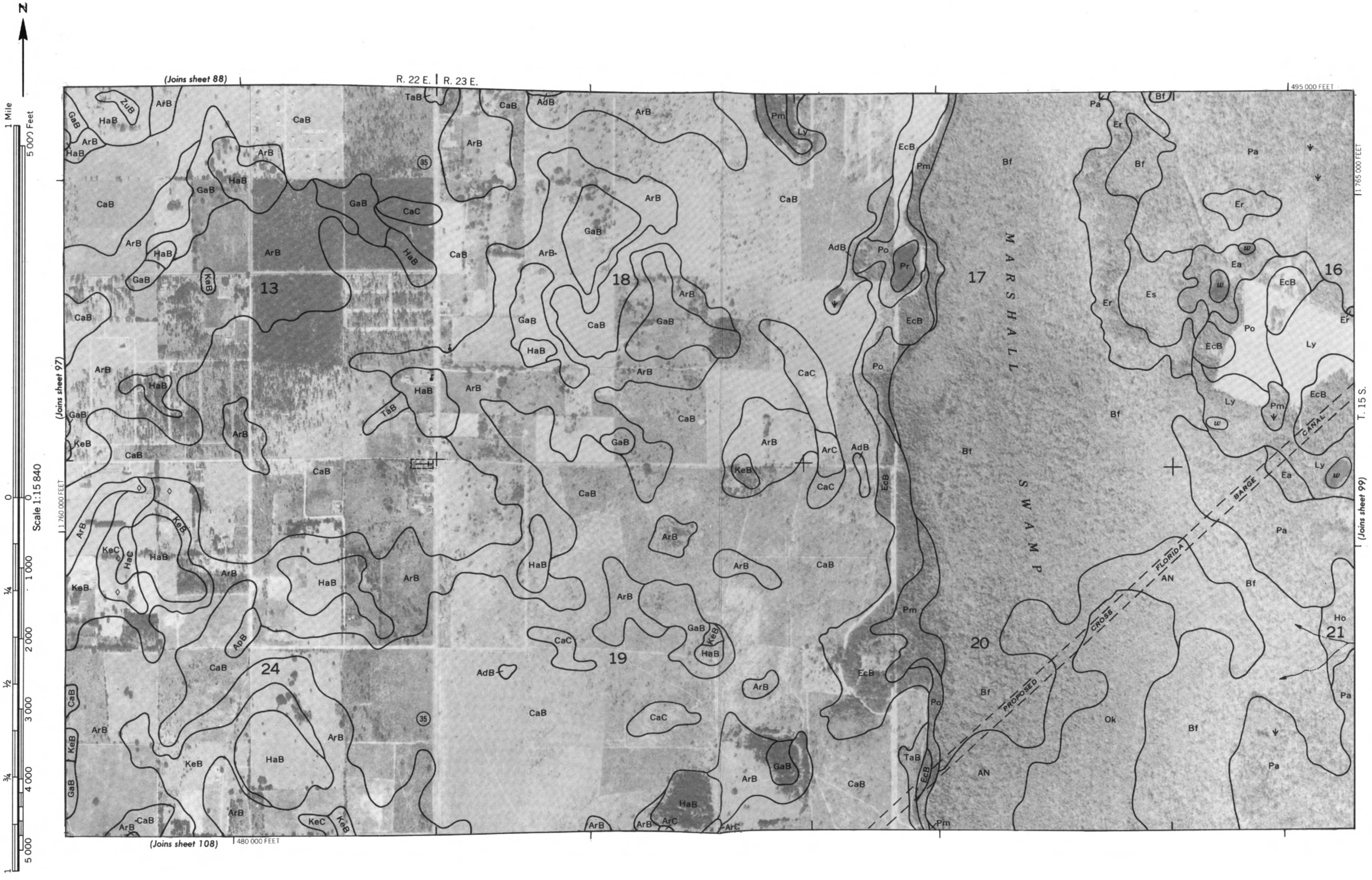

N
(Joins sheet 85)
R. 21 E.
425 000 FEET
1 765 000 FEET
T. 15 S.
(Joins sheet 94)
(Joins sheet 96)
(Joins sheet 105)
1 760 000 FEET
440 000 FEET
CaB
ApB
ArB
CaC
GaB
KeB
UaF
MINE PIT
SpB
w
ZuC
KaB
ZuB
PeB
FeB
ArC
JuB
ALT 225
40
Ocala Ridge
18
17
16
15
OLD RAILROAD GRADE
AdB
Pn
19
20
21
22
OCALA
MUNICIPAL AIRPORT
JIM TAYLOR FIELD
AtB
AtC
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840

MARION COUNTY, FLORIDA — SHEET NUMBER 96

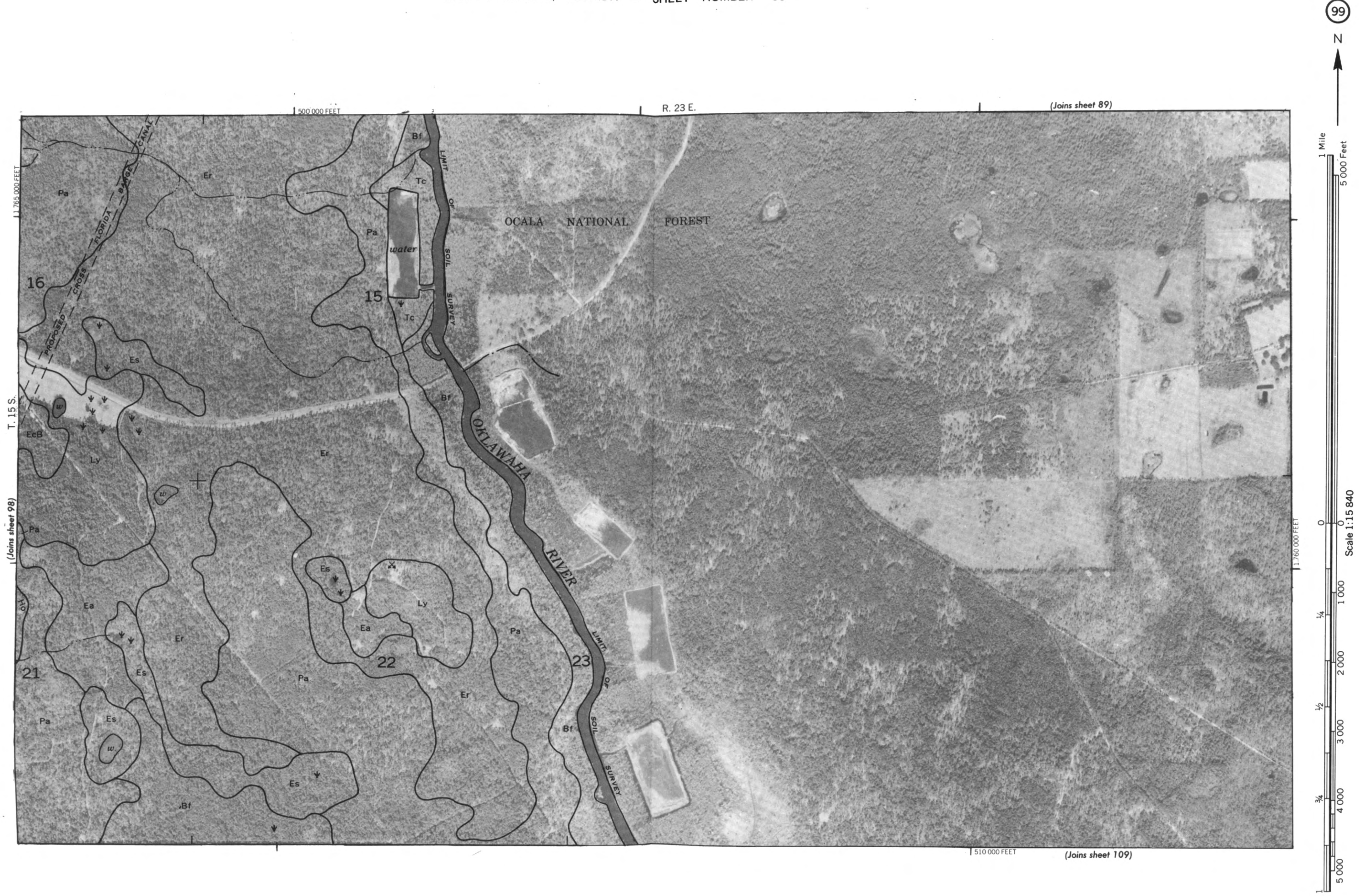

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 86)
(Joins sheet 95)
(Joins sheet 97)
(Joins sheet 106)
R. 21 E.
R. 22 E.
T. 15 S.
455 000 FEET
445 000 FEET
1 765 000 FEET
1 760 000 FEET
OCALA
(county seat)
F. P. Sanchez Grant
Central Florida
Junior College
OLD
RAILROAD
GRADE
SEABOARD
COAST
LINE
MINE PIT
14
13
18
17
37
20
19
23
24
40
75
93
40
200
441
27
301
25
200
500
464
475
C
225
A
KaB
PeB
Pm
KaB
ArB
KeB
HgB
HaB
AsB
SuB
KeC
SpB
ArC
Bp
CaB
UaF
UaA
HaC
GaB
LoA
LoB
BcB
BdB
WaC
FeC
FeB
FmB
ZuB
BoC
Ur
w
KeB


N
(Joins sheet 87)
(Joins sheet 96)
(Joins sheet 98)
(Joins sheet 107)
R. 22 E.
T. 15 S.
460 000 FEET
1 765 000 FEET
1 760 000 FEET
475 000 FEET
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1000
2000
3000
4000
5000
OCALA
(county seat)
Florida School For Girls
FORT KING BURIAL GROUNDS
F.P. Sanchez Grant
SEABOARD COAST LINE
MINE PIT
40
484
17
16
15
14
37
20
21
22
23
40
HgB
SuB
BdB
LoB
KaB
HaB
KeB
ArB
KeA
Bp
CaB
AsB
GaB
ZuC
McB
HaC
Ur
SpB
ZuB
KeC
Pp
Wac
ArC
Po
CaC
FeC
BcB
LoC
UaF
w
water

# MARION COUNTY, FLORIDA — SHEET NUMBER 98

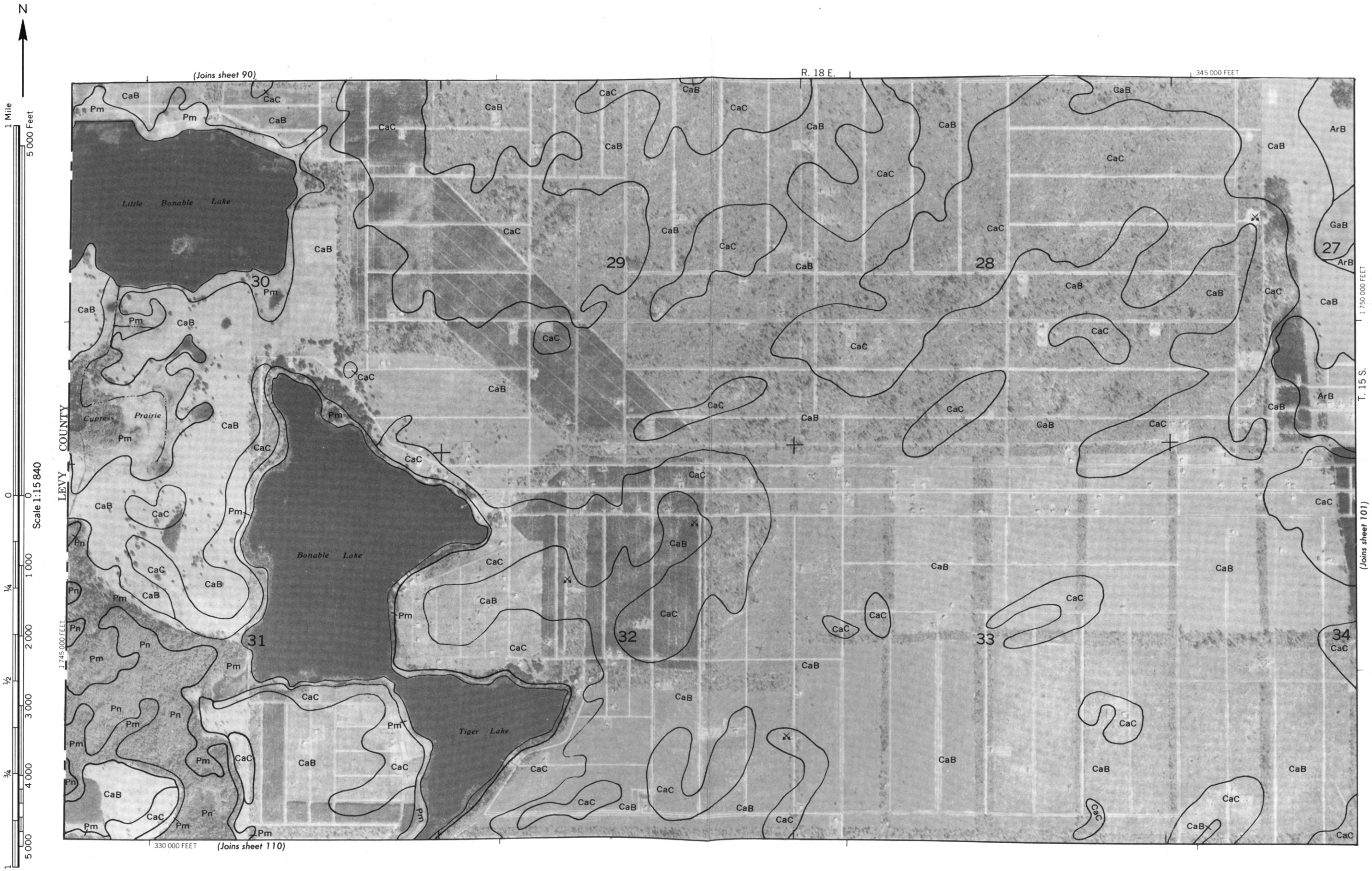

N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840
(Joins sheet 88)
R. 22 E.
R. 23 E.
495 000 FEET
1 765 000 FEET
T. 15 S.
(Joins sheet 97)
1 760 000 FEET
(Joins sheet 99)
(Joins sheet 108)
480 000 FEET
MARSHALL SWAMP
PROPOSED CROSS FLORIDA BARGE CANAL
35
13
16
17
18
19
20
21
24
GaB
HaB
ZuB
ArB
CaB
TaB
AdB
Pm
Ly
EcB
Bf
Pa
Er
Po
Pr
Es
Ea
Ly
w
CaC
KaB
KeB
KeC
HaC
ApB
ArC
AN
Ok
Ho

MARION COUNTY, FLORIDA — SHEET NUMBER 99

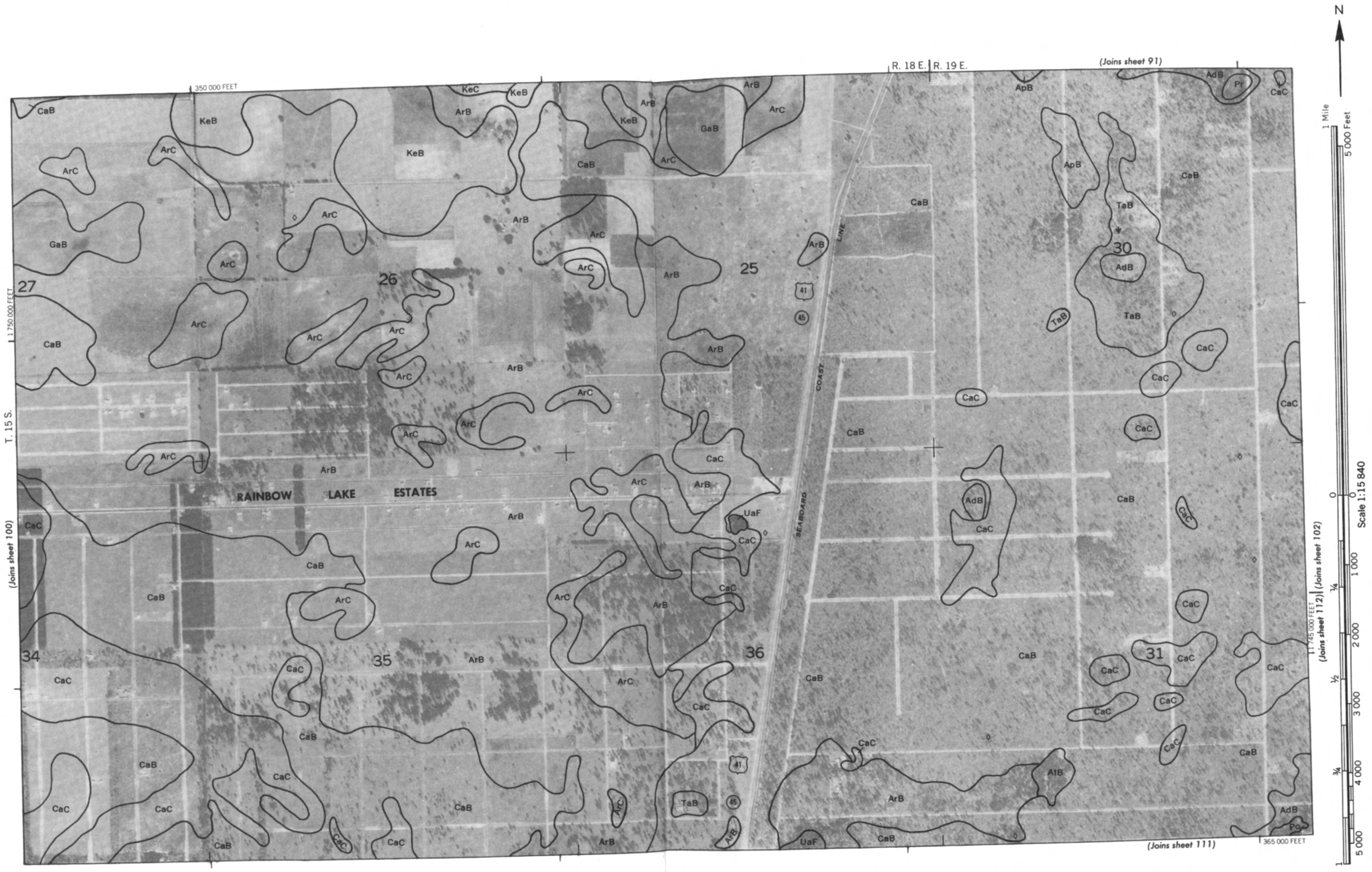

99
N
(Joins sheet 89)
(Joins sheet 98)
(Joins sheet 109)
500 000 FEET
510 000 FEET
1 765 000 FEET
1 760 000 FEET
R. 23 E.
T. 15 S.
OCALA NATIONAL FOREST
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
PROPOSED CROSS FLORIDA BARGE CANAL
water
16
15
21
22
23
Pa
Er
Bf
Tc
Es
EcB
Ly
w
Ea
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

## MARION COUNTY, FLORIDA — SHEET NUMBER 100

(100)

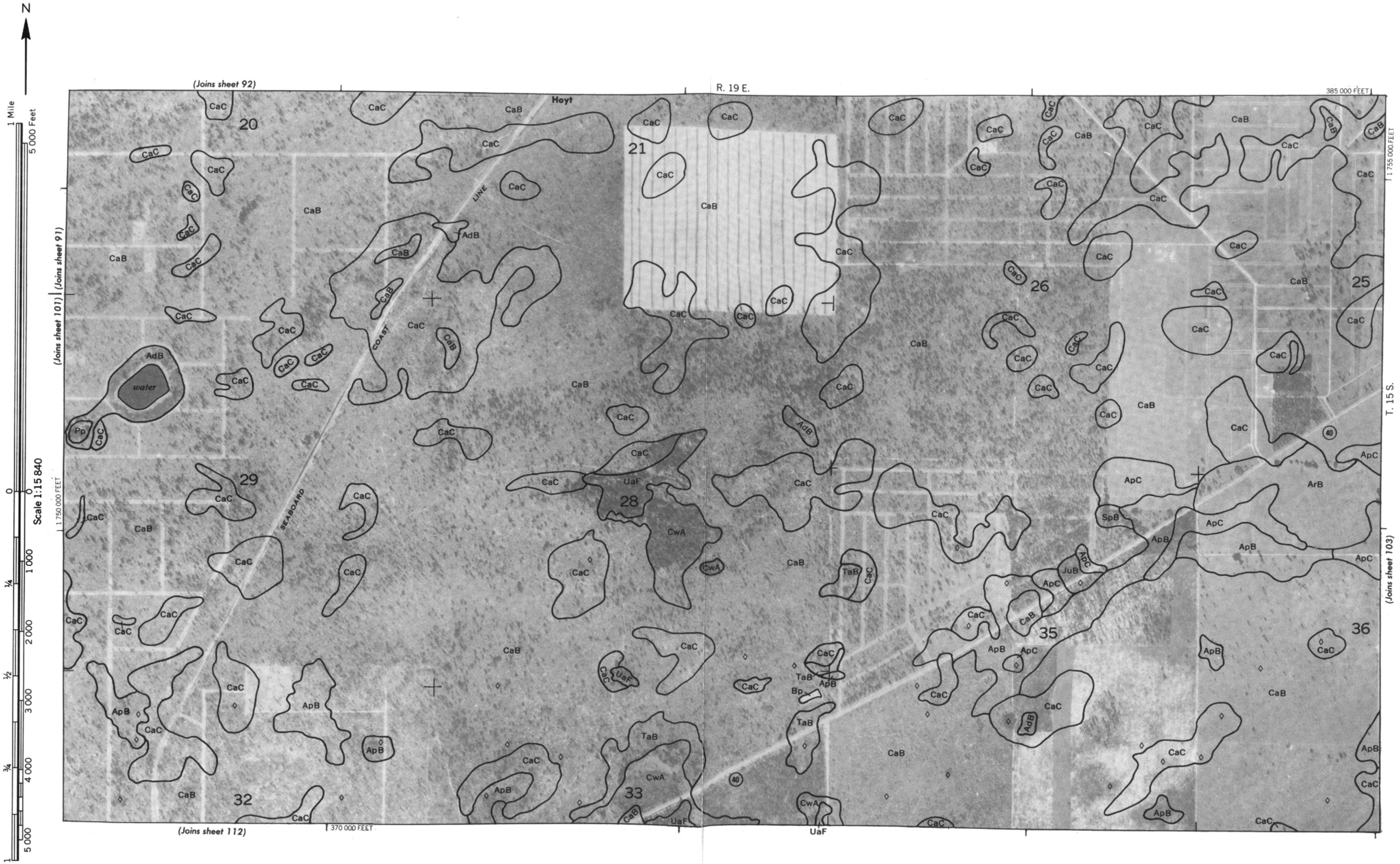

N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
(Joins sheet 90)
R. 18 E.
345 000 FEET
1 750 000 FEET
T. 15 S.
(Joins sheet 101)
(Joins sheet 110)
330 000 FEET
1 745 000 FEET
LEVY COUNTY
Little Bonable Lake
Cypress Prairie
Bonable Lake
Tiger Lake
27
28
29
30
31
32
33
34
CaB
CaC
Pm
Pn
ArB
GaB

# MARION COUNTY, FLORIDA — SHEET NUMBER 101

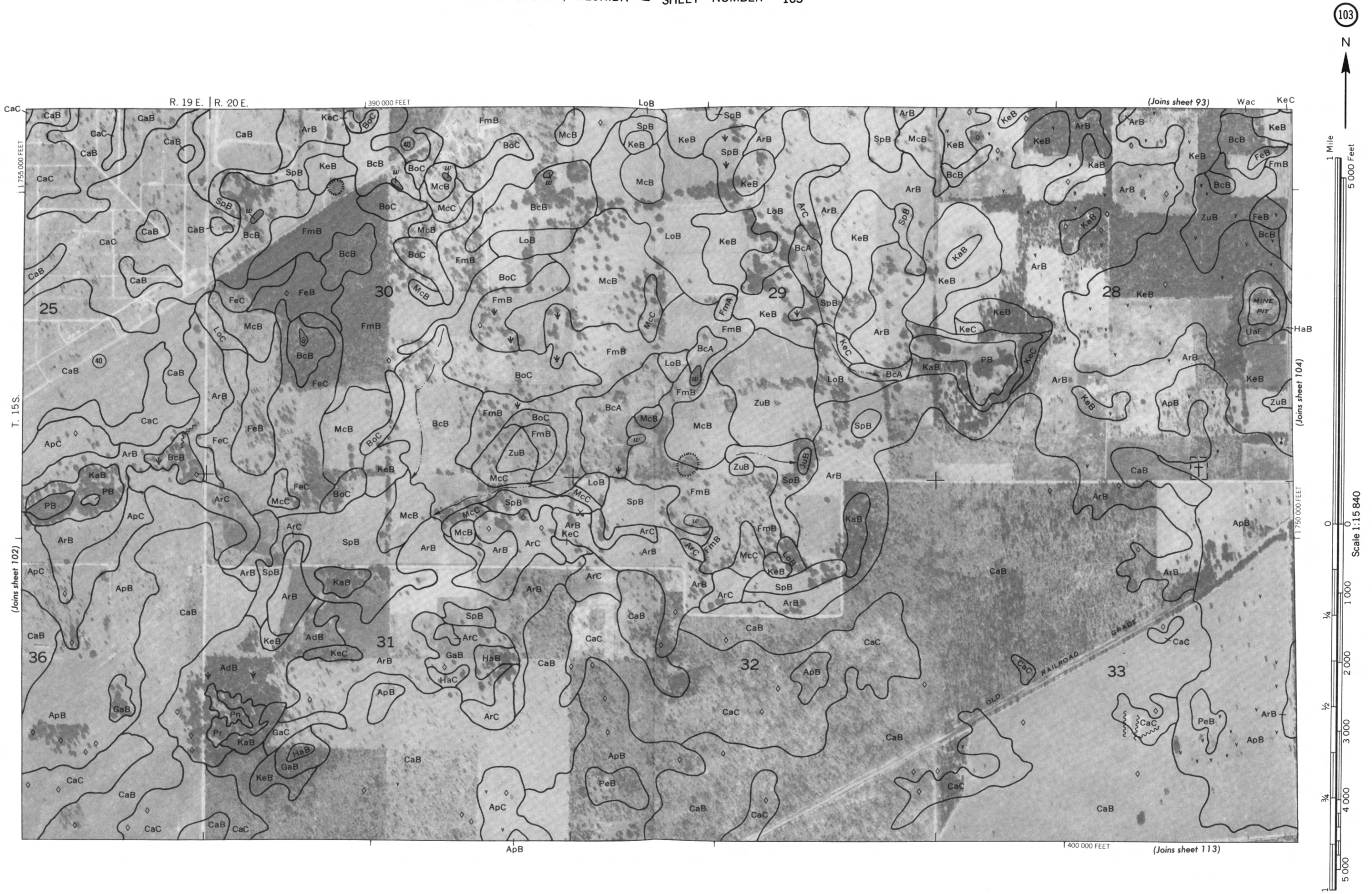

N
R. 18 E.
R. 19 E.
(Joins sheet 91)
350 000 FEET
1 750 000 FEET
T. 15 S.
(Joins sheet 100)
(Joins sheet 102)
(Joins sheet 112)
(Joins sheet 111)
1 745 000 FEET
365 000 FEET
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
RAINBOW
LAKE
ESTATES
SEABOARD
COAST
LINE
41
45
25
26
27
30
31
34
35
36
CaB
KeB
KeC
ArB
ArC
GaB
ApB
AdB
Pr
CaC
TaB
UaF
AtB
Po

102

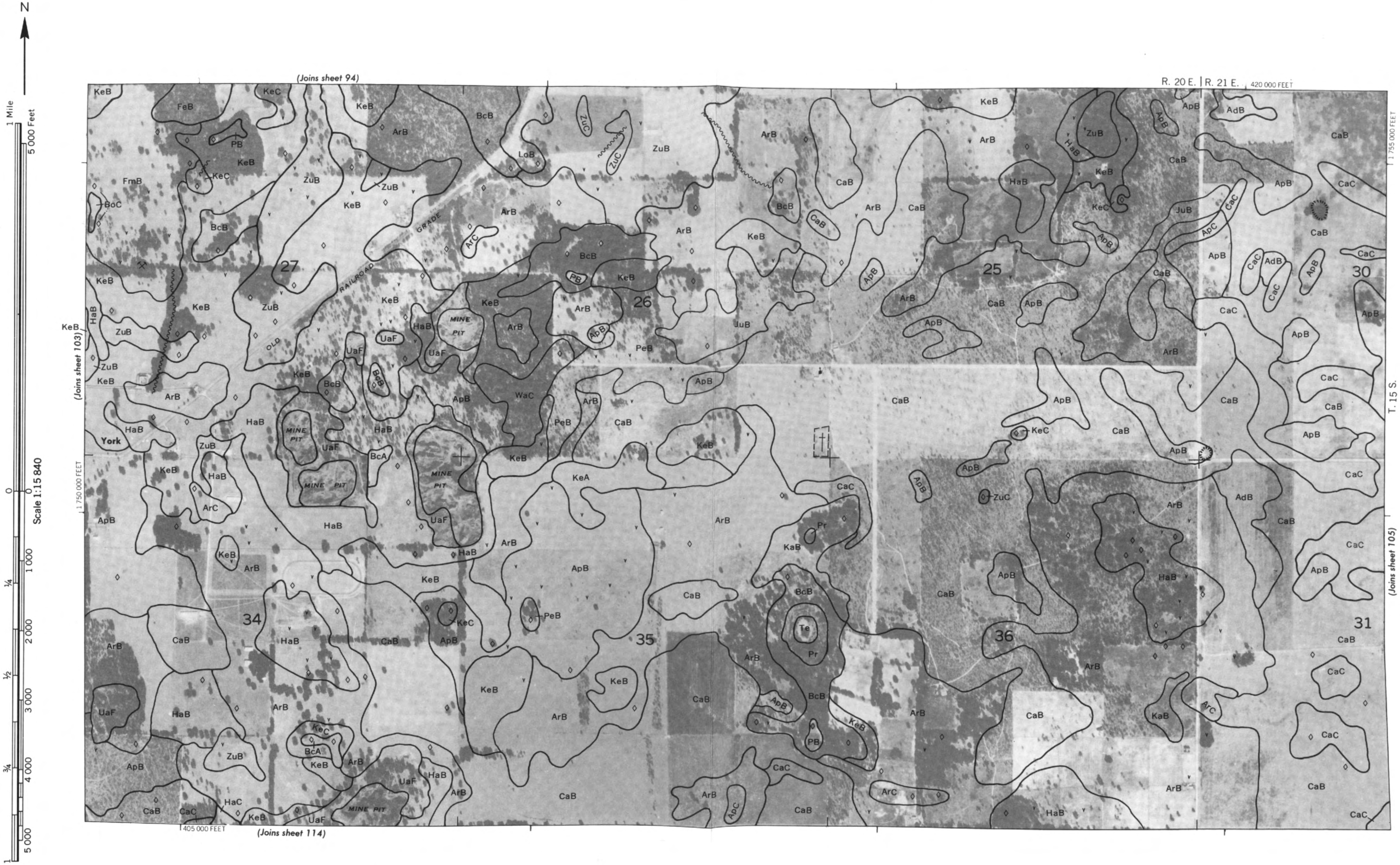
MARION COUNTY, FLORIDA — SHEET NUMBER 102


N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
0
¼
½
¾
1
Scale 1:15 840
(Joins sheet 92)
(Joins sheet 91)
(Joins sheet 101)
(Joins sheet 103)
(Joins sheet 112)
R. 19 E.
T. 15 S.
385 000 FEET
1 755 000 FEET
1 750 000 FEET
370 000 FEET
Hoyt
SEABOARD
COAST
LINE
40
20
21
25
26
28
29
32
33
35
36
water
CaB
CaC
AdB
ApB
ApC
ArB
CwA
UaF
TaB
JuB
SpB
Pp
Bp

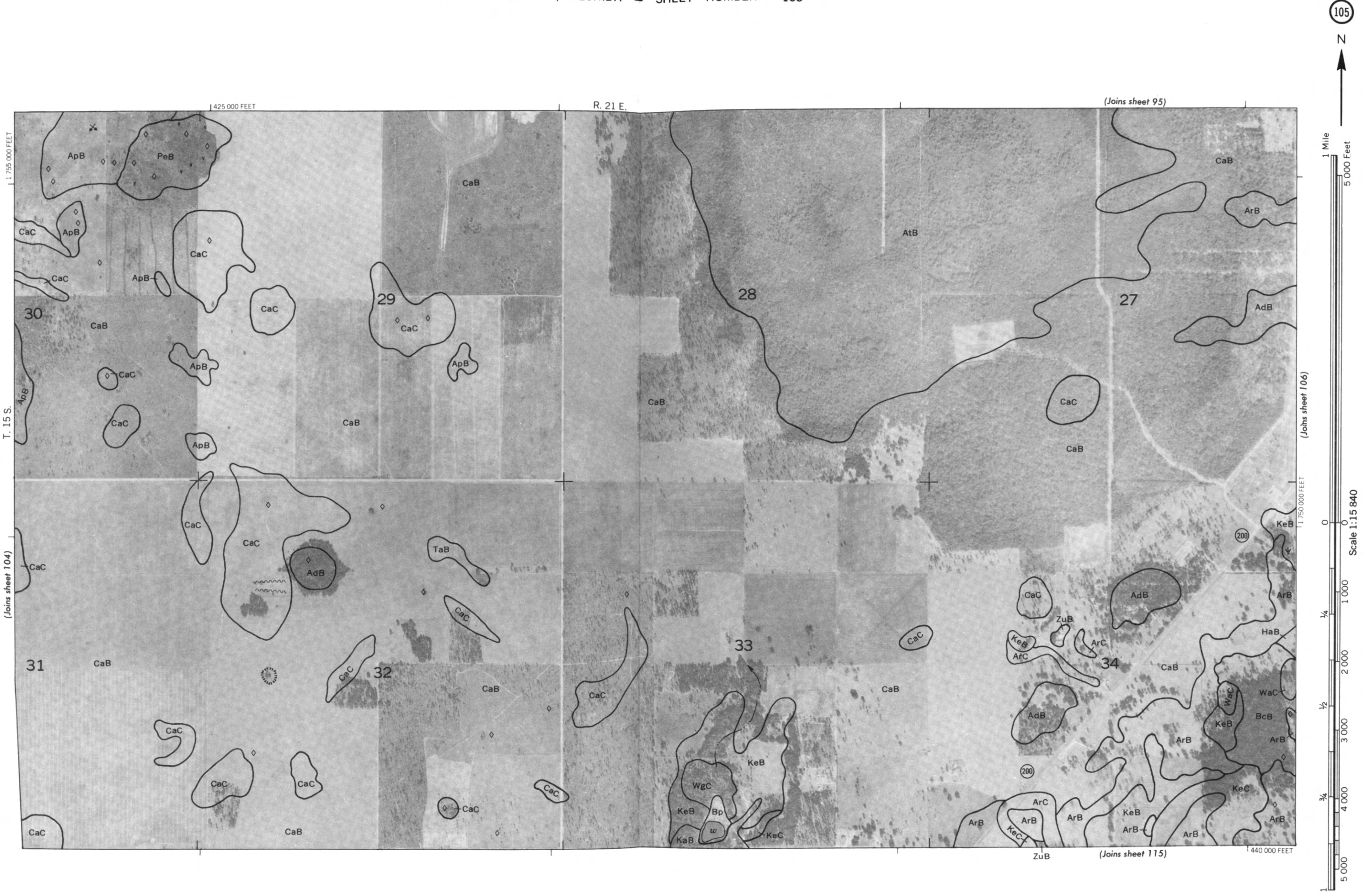
# MARION COUNTY, FLORIDA — SHEET NUMBER 103


103
N
R. 19 E.
R. 20 E.
390 000 FEET
LoB
(Joins sheet 93)
Wac
KeC
CaC
1 755 000 FEET
T. 15 S.
(Joins sheet 102)
(Joins sheet 104)
HaB
1 750 000 FEET
ApB
400 000 FEET
(Joins sheet 113)
25
30
29
28
36
31
32
33
40
MINE PIT
UaF
OLD RAILROAD GRADE
CaB
ArB
KeB
McB
FmB
BoC
BcB
SpB
ZuB
PB
KaB
ApC
ApB
CaC
PeB
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1

MARION COUNTY, FLORIDA — SHEET NUMBER 104

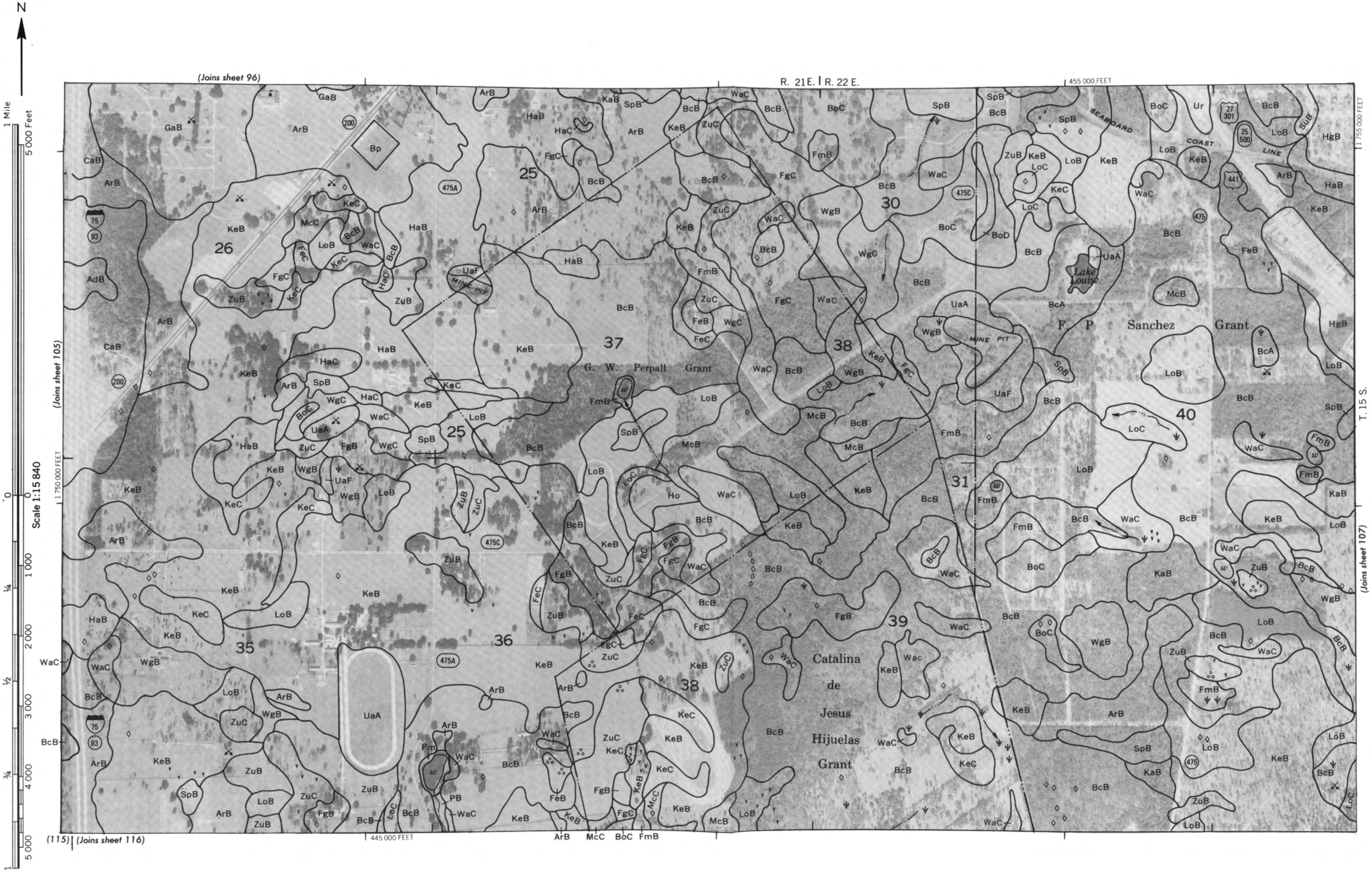

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 94)
(Joins sheet 103)
(Joins sheet 105)
(Joins sheet 114)
R. 20 E.
R. 21 E.
420 000 FEET
1 755 000 FEET
1 750 000 FEET
405 000 FEET
T. 15 S.
York
OLD RAILROAD GRADE
MINE PIT
27
26
25
30
34
35
36
31
KeB
FeB
KeC
BcB
ArB
ZuB
LoB
ZuC
CaB
ApB
AdB
HaB
FmB
PB
BoC
ZuB
ArC
JuB
CaC
ApC
UaF
BcA
WaC
PeB
KeA
JuB
HaC
Pr
Te
KaB
ArB

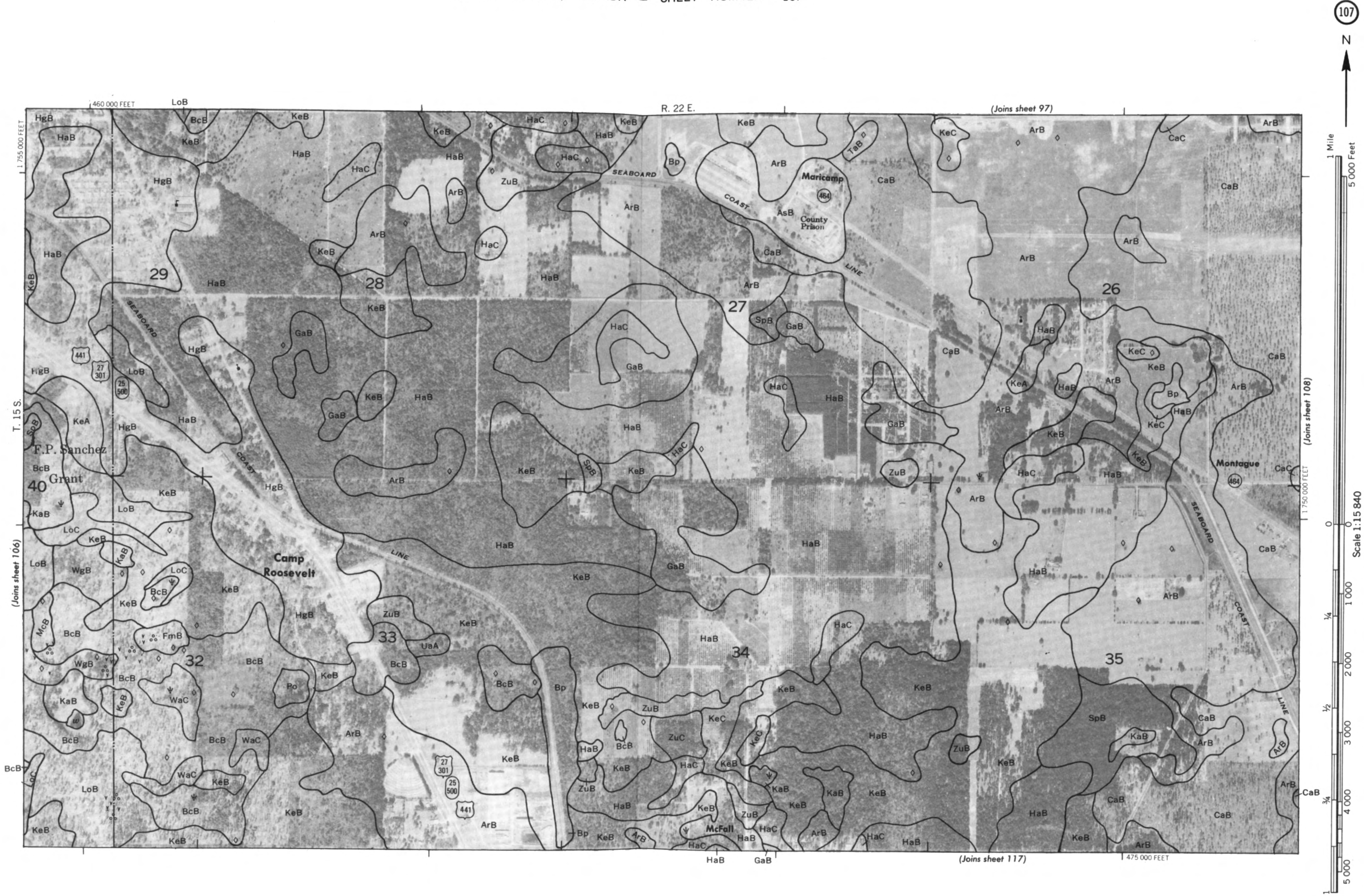
MARION COUNTY, FLORIDA — SHEET NUMBER 105

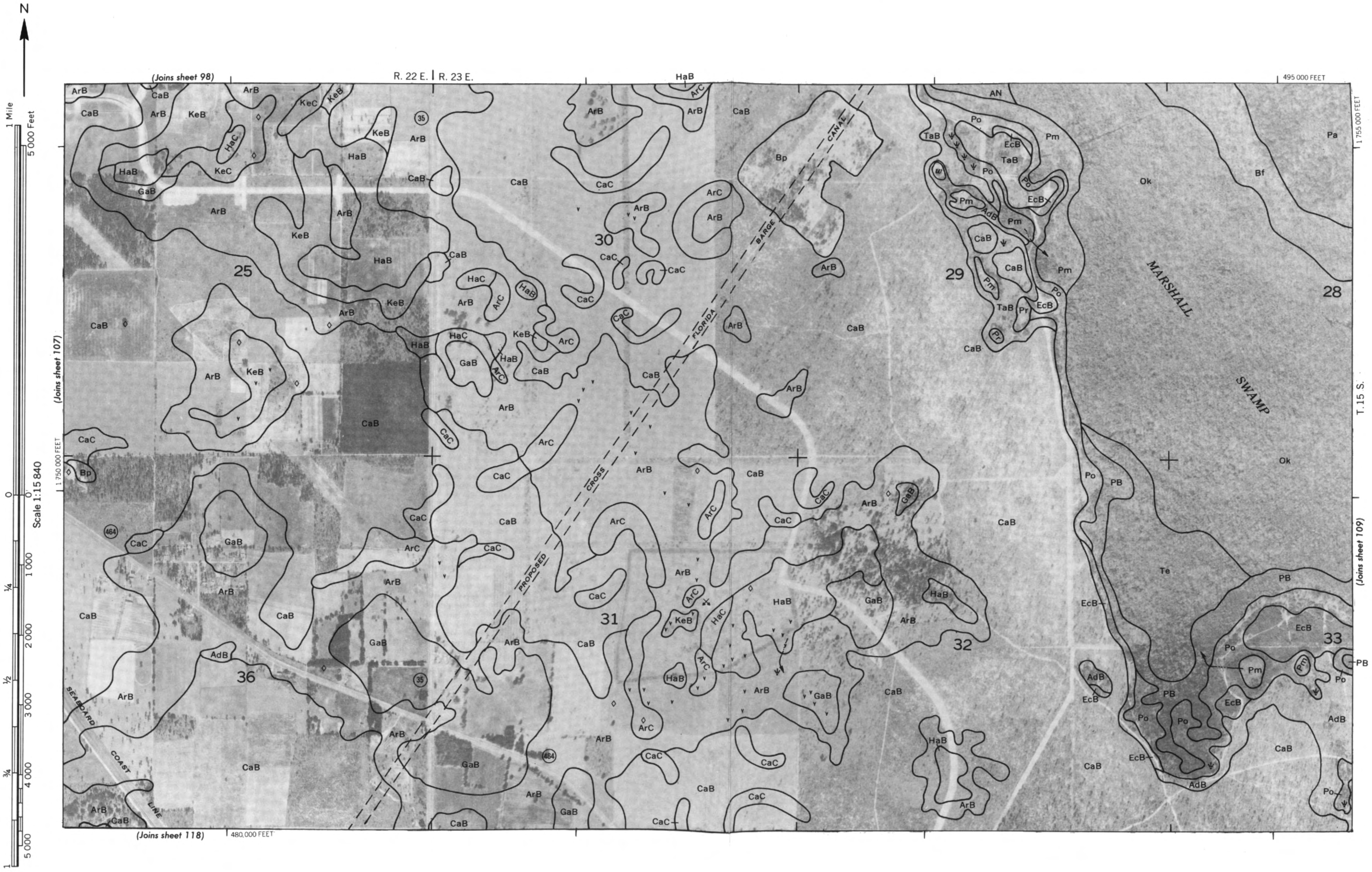

105
N
R. 21 E.
425 000 FEET
(Joins sheet 95)
1 755 000 FEET
T. 15 S.
(Joins sheet 104)
(Joins sheet 106)
1 750 000 FEET
(Joins sheet 115)
440 000 FEET
ApB
PeB
CaB
CaC
ApB
CaC
CaC
ApB
CaC
CaC
30
CaB
29
CaC
ApB
ApB
CaC
ApB
CaC
ApB
CaB
ApB
CaC
CaC
AdB
TaB
CaC
CaC
CaC
31
CaB
CaC
32
CaB
CaC
CaC
CaC
CaC
CaC
CaB
CaC
28
AtB
CaB
CaB
33
KeB
WgC
KeB
Bp
w
KaB
KeC
CaB
CaC
27
CaB
ArB
AdB
CaC
CaB
KeB
200
ArB
AdB
CaC
ZuB
KeB
ArC
ArC
34
CaB
HaB
AdB
WaC
KeB
BcB
ArB
ArB
200
KeB
KeC
ArC
ArB
ArB
ArB
KeC
ArB
ArB
ArB
ZuB
1 Mile
5 000 Feet
Scale 1:15 840
0
0
1/4
1 000
2 000
1/2
3 000
3/4
4 000
1
5 000

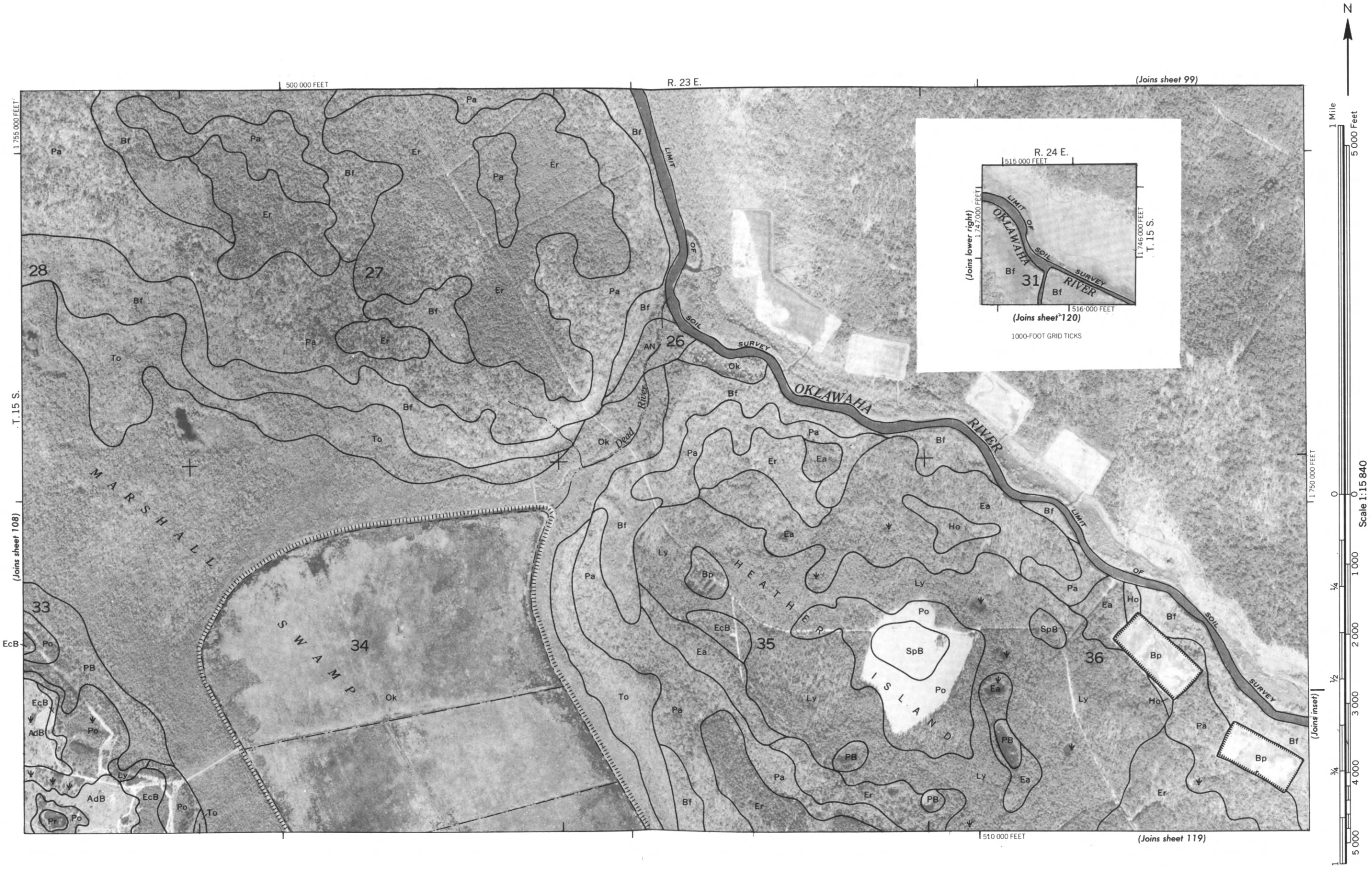
(106)

# MARION COUNTY, FLORIDA — SHEET NUMBER 106

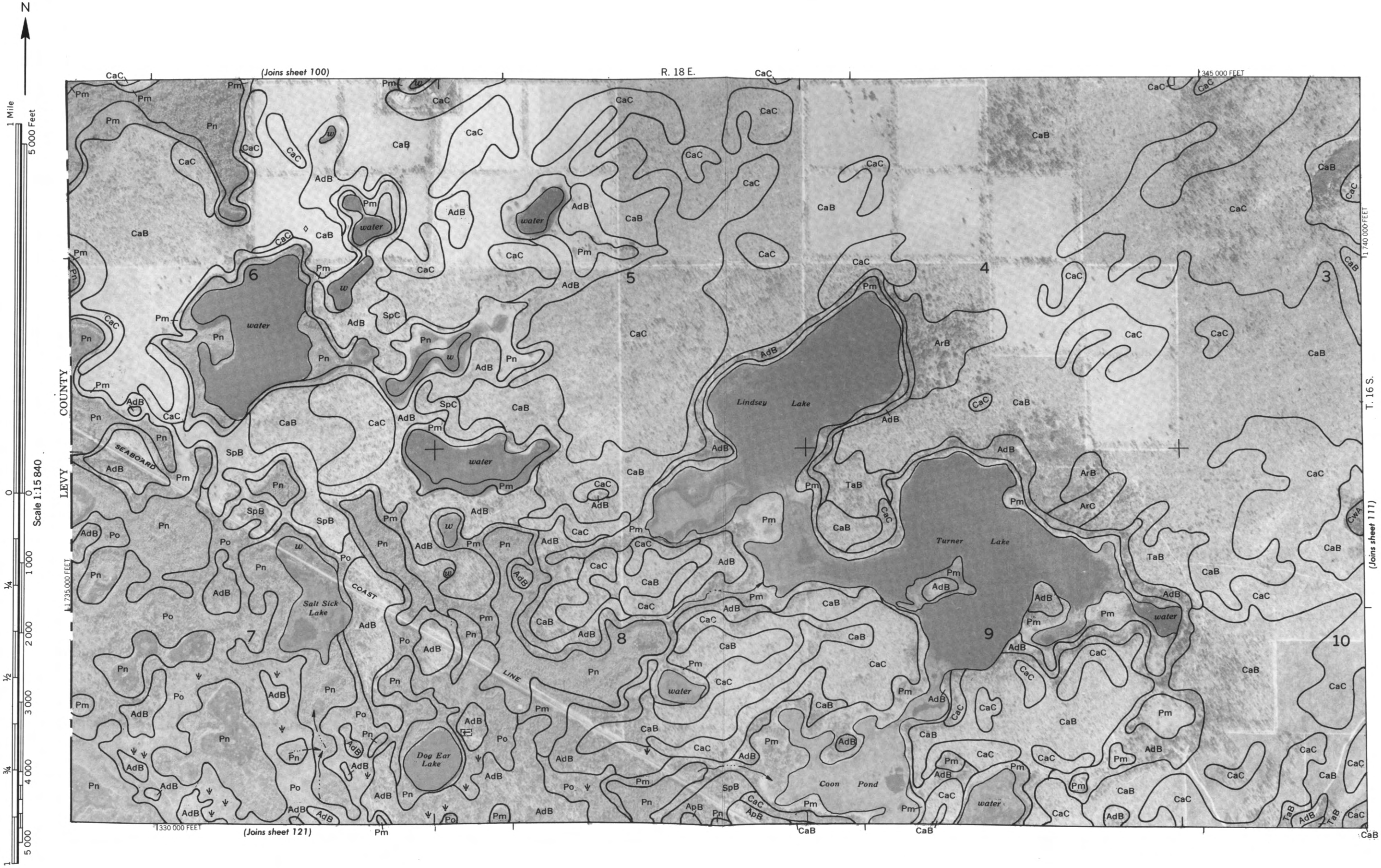

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
(Joins sheet 96)
(Joins sheet 105)
(Joins sheet 107)
(115) | (Joins sheet 116)
R. 21 E. | R. 22 E.
T. 15 S.
455 000 FEET
445 000 FEET
1 755 000 FEET
1 750 000 FEET
SEABOARD COAST LINE
MINE PIT
MINE PIT
Lake Louise
G. W. Perpall Grant
F. P. Sanchez Grant
Catalina de Jesus Hijuelas Grant
25
26
30
31
35
36
37
38
39
40
75
93
200
475A
475C
475
441
27
301
25
500
GaB
ArB
CaB
AdB
Bp
KeB
KeC
McC
LoB
BcB
WaC
FeC
FgC
HaC
ZuB
ZuC
HaB
UaF
SpB
WgC
WgB
BoC
UaA
FgB
FeB
FmB
McB
LoC
BoD
BcA
UaA
SpB
Ur
HgB
SuB
KaB
ArB
Ho
Pm
PB
McC
BoC
FmB
w


107
N
(Joins sheet 97)
(Joins sheet 106)
(Joins sheet 108)
(Joins sheet 117)
R. 22 E.
T. 15 S.
460 000 FEET
475 000 FEET
1 755 000 FEET
1 750 000 FEET
SEABOARD COAST LINE
Maricamp
County Prison
Camp Roosevelt
Montague
McFall
F.P. Sanchez Grant
26
27
28
29
32
33
34
35
40
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1000
2000
3000
4000
5000
ArB
AsB
BcB
Bp
CaB
CaC
FmB
GaB
HaB
HaC
HgB
KaB
KeA
KeB
KeC
LoB
LoC
McB
SpB
TaB
UaA
WaC
WgB
ZuB
ZuC


N
1 Mile
5 000 Feet
0
Scale 1:15 840
1000
2000
3000
4000
5000
¼
½
¾
1
(Joins sheet 98)
(Joins sheet 107)
(Joins sheet 109)
(Joins sheet 118)
R. 22 E.
R. 23 E.
T. 15 S.
495 000 FEET
1 755 000 FEET
1 750 000 FEET
480,000 FEET
25
28
29
30
31
32
33
36
35
464
MARSHALL SWAMP
PROPOSED CROSS FLORIDA BARGE CANAL
SEABOARD COAST LINE
AN
AdB
ArB
ArC
Bf
Bp
CaB
CaC
EcB
GaB
HaB
HaC
KeB
KeC
Ok
PB
Pa
Pm
Po
Pr
TaB
Te

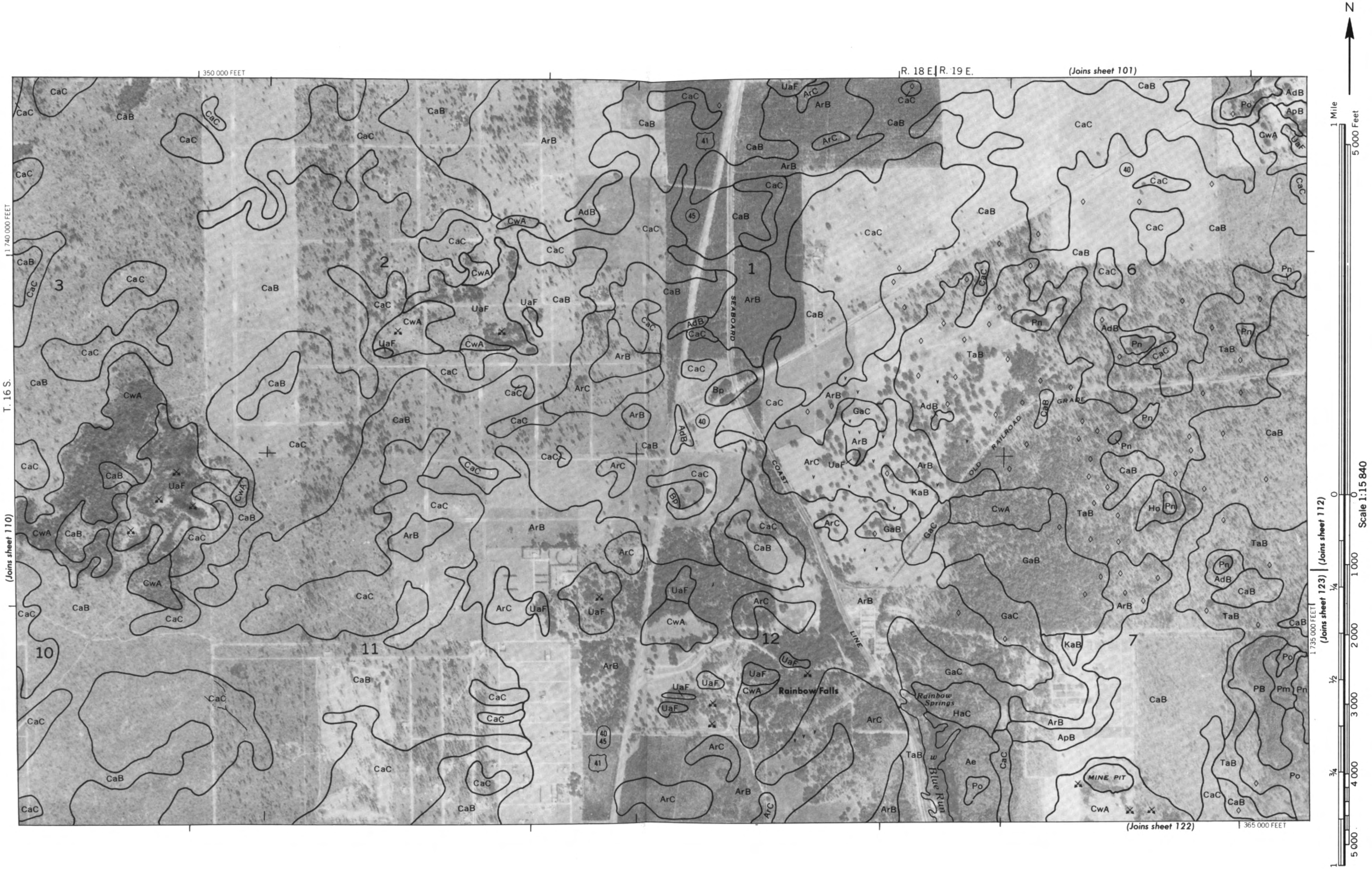

N
500 000 FEET
R. 23 E.
(Joins sheet 99)
1 755 000 FEET
T. 15 S.
(Joins sheet 108)
R. 24 E.
515 000 FEET
1 747 000 FEET
1 746 000 FEET
T. 15 S.
(Joins lower right)
LIMIT OF SOIL SURVEY
OKLAWAHA RIVER
31
Bf
516 000 FEET
(Joins sheet 120)
1000-FOOT GRID TICKS
28
27
26
33
34
35
36
MARSHALL
SWAMP
HEATHER ISLAND
Dead River
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
Pa
Bf
Er
To
AN
Ok
Ea
Ho
Ly
Bp
EcB
SpB
Po
PB
AdB
Pr
1 750 000 FEET
510 000 FEET
(Joins sheet 119)
(Joins inset)
1 Mile
5 000 Feet
0
¼
½
¾
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

MARION COUNTY, FLORIDA — SHEET NUMBER 110


N
1 Mile
5 000 Feet
Scale 1:15 840
(Joins sheet 100)
R. 18 E.
345 000 FEET
1 740 000 FEET
T. 16 S.
(Joins sheet 111)
(Joins sheet 121)
330 000 FEET
1 735 000 FEET
LEVY COUNTY
SEABOARD COAST LINE
Lindsey Lake
Turner Lake
Salt Sick Lake
Dog Ear Lake
Coon Pond
water
3
4
5
6
7
8
9
10
CaC
CaB
AdB
Pm
Pn
Po
SpB
SpC
ArB
ArC
TaB
ApB
CwA

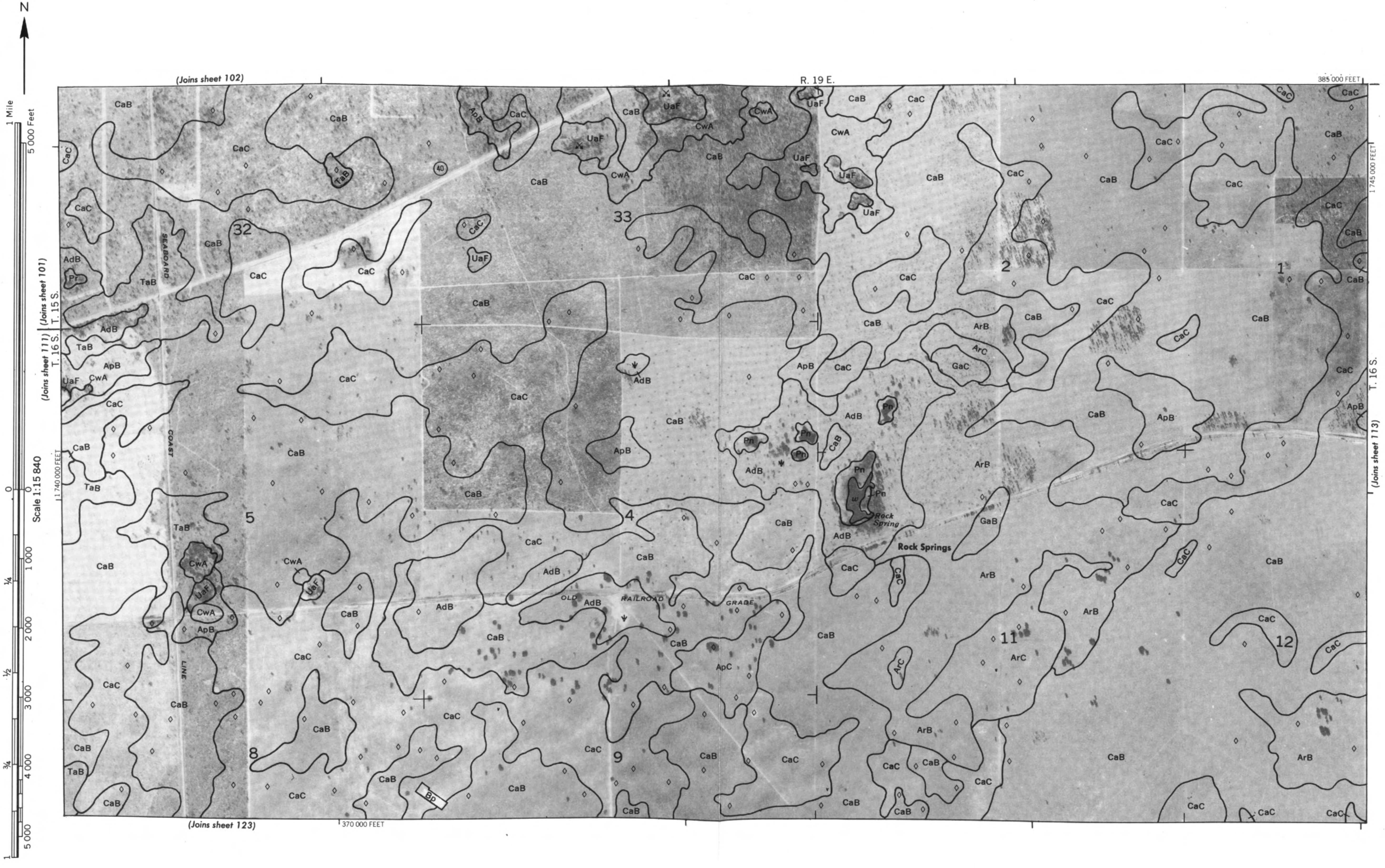
MARION COUNTY, FLORIDA — SHEET NUMBER 111

(111)

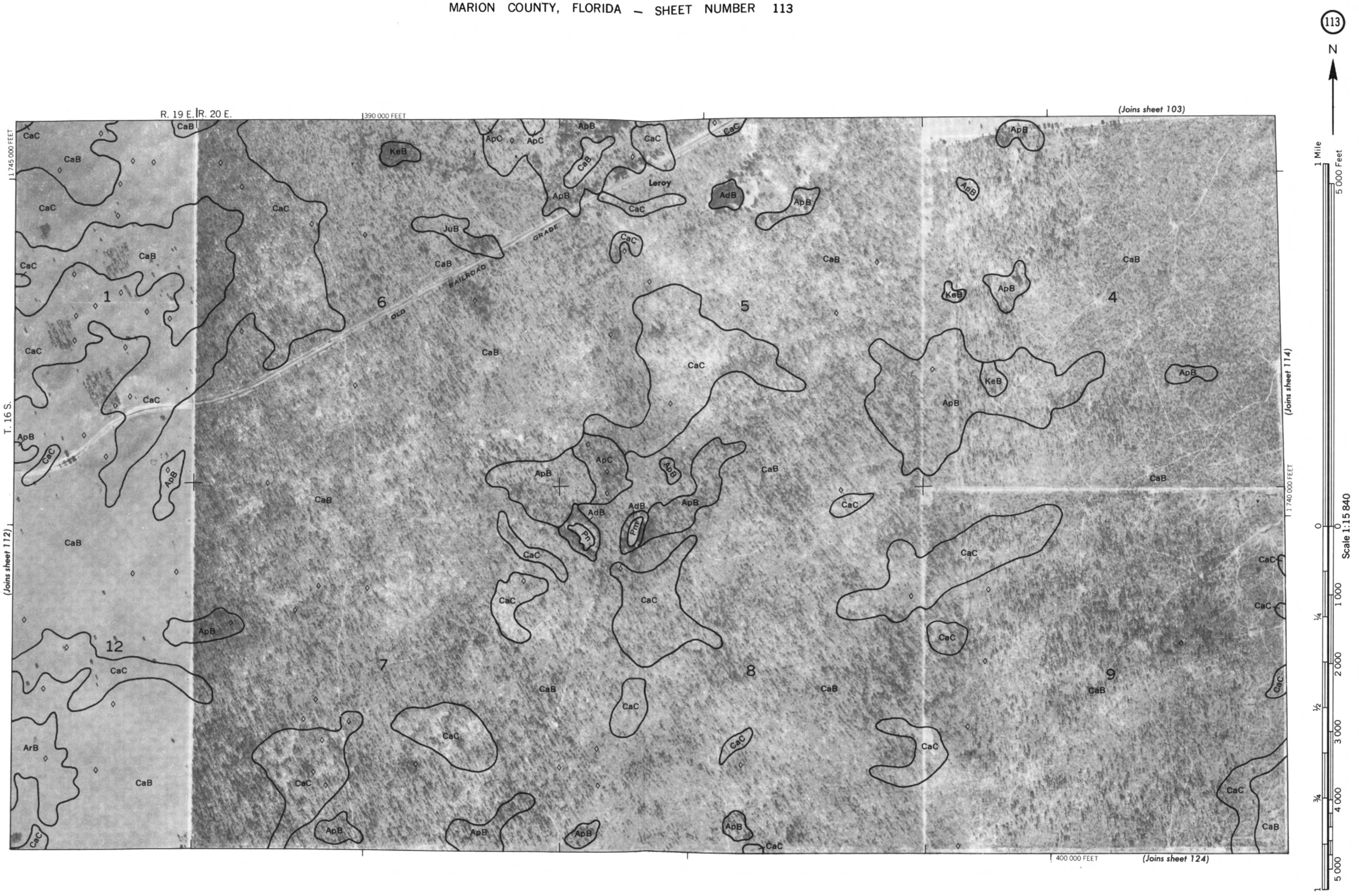

N
350 000 FEET
R. 18 E. | R. 19 E.
(Joins sheet 101)
(Joins sheet 110)
(Joins sheet 112)
(Joins sheet 122)
(Joins sheet 123)
1 740 000 FEET
1 735 000 FEET
365 000 FEET
T. 16 S.
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
1/4
1/2
3/4
1
SEABOARD COAST LINE
OLD RAILROAD GRADE
Rainbow Falls
Rainbow Springs
Blue Run
MINE PIT
41
45
40
40 45
1
2
3
6
7
10
11
12
CaC
CaB
ArB
ArC
AdB
CwA
UaF
Bp
GaC
GaB
KaB
HaC
Ae
Po
Pn
PB
Pm
TaB
ApB
AdB
Ho
CaC
CaB

(112)

MARION COUNTY, FLORIDA — SHEET NUMBER 112

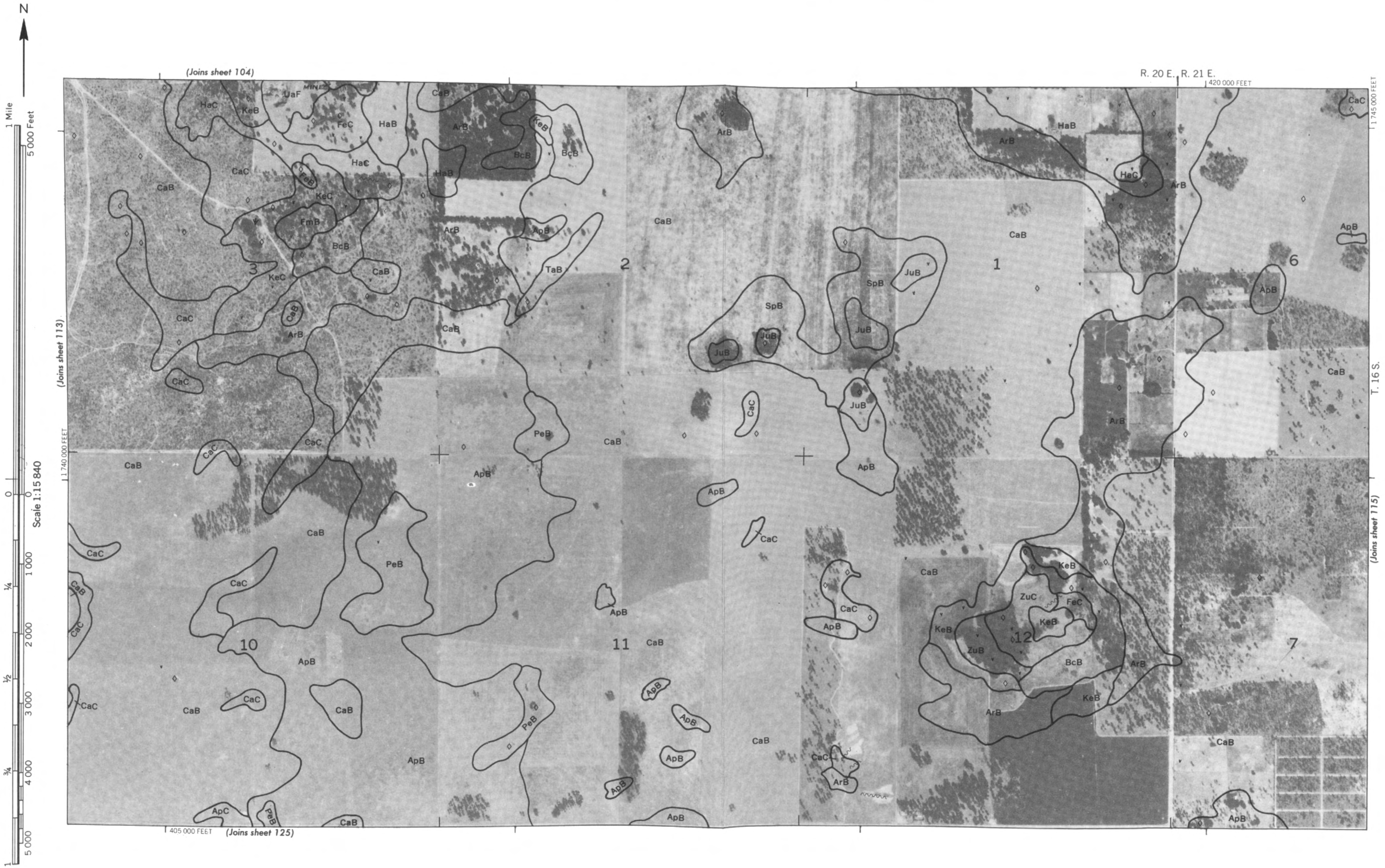

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 102)
R. 19 E.
385 000 FEET
1 745 000 FEET
T. 16 S.
(Joins sheet 113)
(Joins sheet 123)
370 000 FEET
(Joins sheet 101)
T. 15 S.
T. 16 S.
(Joins sheet 111)
1 740 000 FEET
SEABOARD
COAST
LINE
OLD RAILROAD GRADE
Rock Spring
Rock Springs
40
32
33
2
1
5
4
11
12
8
9
CaB
CaC
CwA
UaF
TaB
AdB
ApB
ApC
ArB
ArC
GaB
GaC
Pn
Pr
Bp
w

MARION COUNTY, FLORIDA — SHEET NUMBER 113

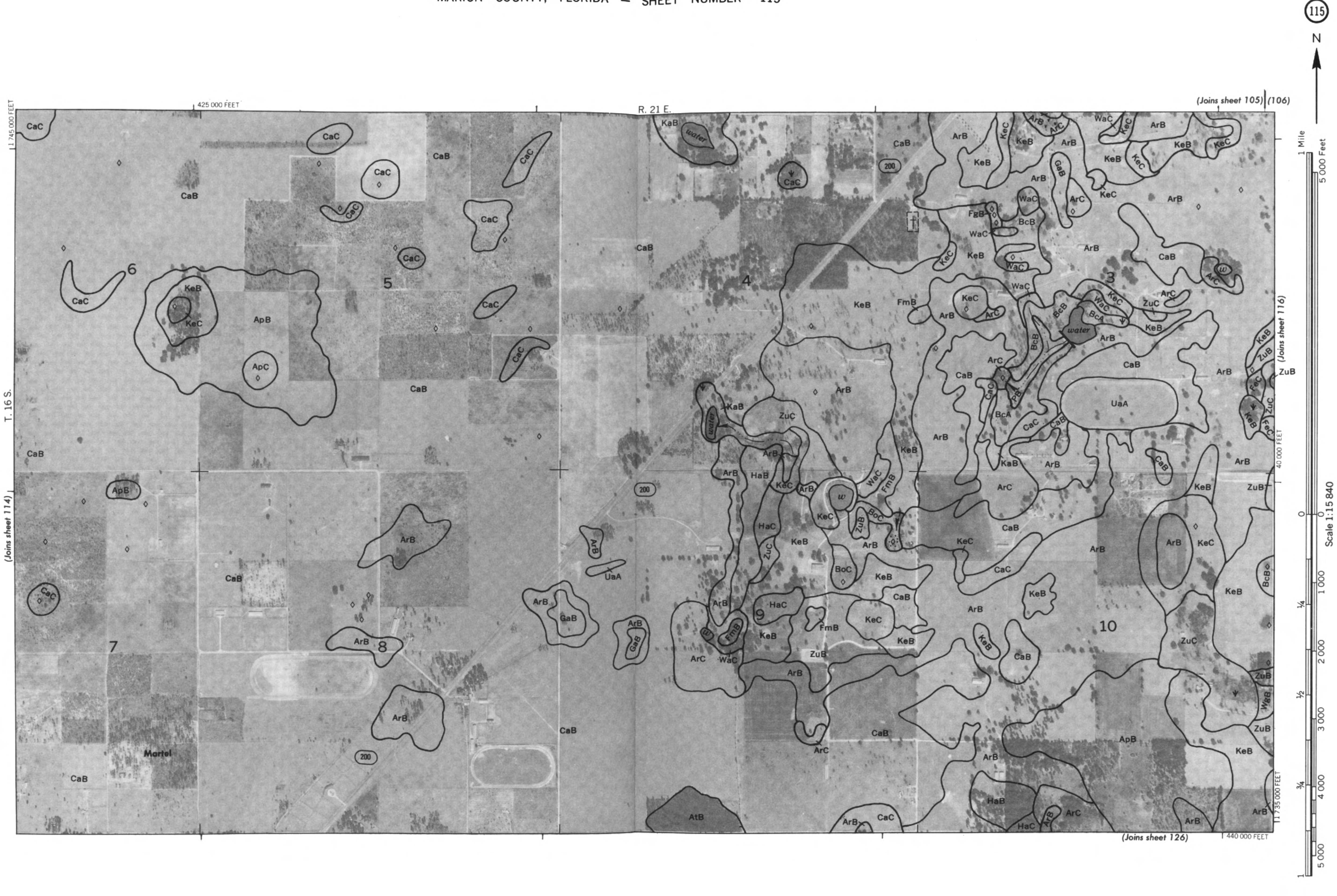


113
N
R. 19 E.
R. 20 E.
390 000 FEET
(Joins sheet 103)
1 745 000 FEET
T. 16 S.
(Joins sheet 112)
(Joins sheet 114)
1 740 000 FEET
400 000 FEET
(Joins sheet 124)
Leroy
OLD RAILROAD GRADE
1
4
5
6
7
8
9
12
CaB
CaC
ApB
ApC
AdB
KeB
JuB
ArB
Pm
Pu
1 Mile
5 000 Feet
0
¼
½
¾
1
1000
2000
3000
4000
5 000
Scale 1:15 840

# MARION COUNTY, FLORIDA — SHEET NUMBER 114


N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 104)
(Joins sheet 113)
(Joins sheet 115)
(Joins sheet 125)
R. 20 E.
R. 21 E.
420 000 FEET
1 745 000 FEET
T. 16 S.
1 740 000 FEET
405 000 FEET
MINES
UaF
HaC
KeB
FeC
HaB
CaB
ArB
KeB
BcB
BcB
HaC
HaB
CaC
CaB
FeB
KeC
FmB
BcB
ArB
ApB
TaB
CaB
KeC
3
CaC
CaB
ArB
CaB
CaC
CaC
CaB
2
CaB
ArB
SpB
JuB
SpB
JuB
JuB
JuB
JuB
CaC
ApB
HaB
ArB
HaC
ArB
CaB
1
CaC
ApB
6
ApB
CaB
ArB
CaB
ApB
PeB
CaB
ApB
CaB
PeB
CaC
CaC
CaB
CaC
10
ApB
ApB
11
CaB
ApB
CaC
CaC
ApB
CaB
KeB
ZuC
FeC
KeB
KeB
ZuB
12
BcB
ArB
KeB
ArB
7
CaC
CaB
CaC
CaB
PeB
ApB
ApB
ApB
ApB
CaB
CaC
ArB
ApB
ApC
PeB
CaB
ApB
CaB
ApB

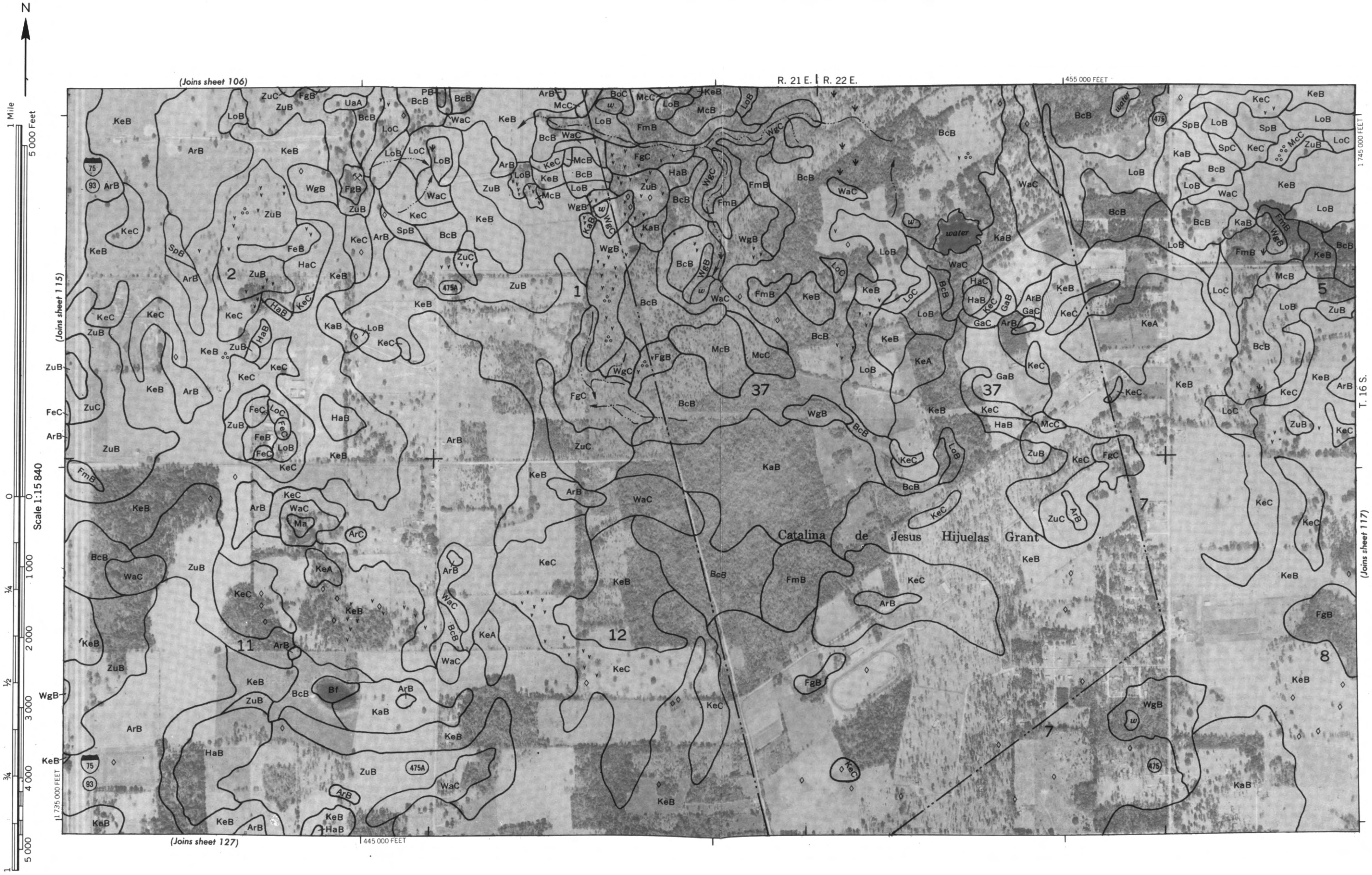
# MARION COUNTY, FLORIDA — SHEET NUMBER 115



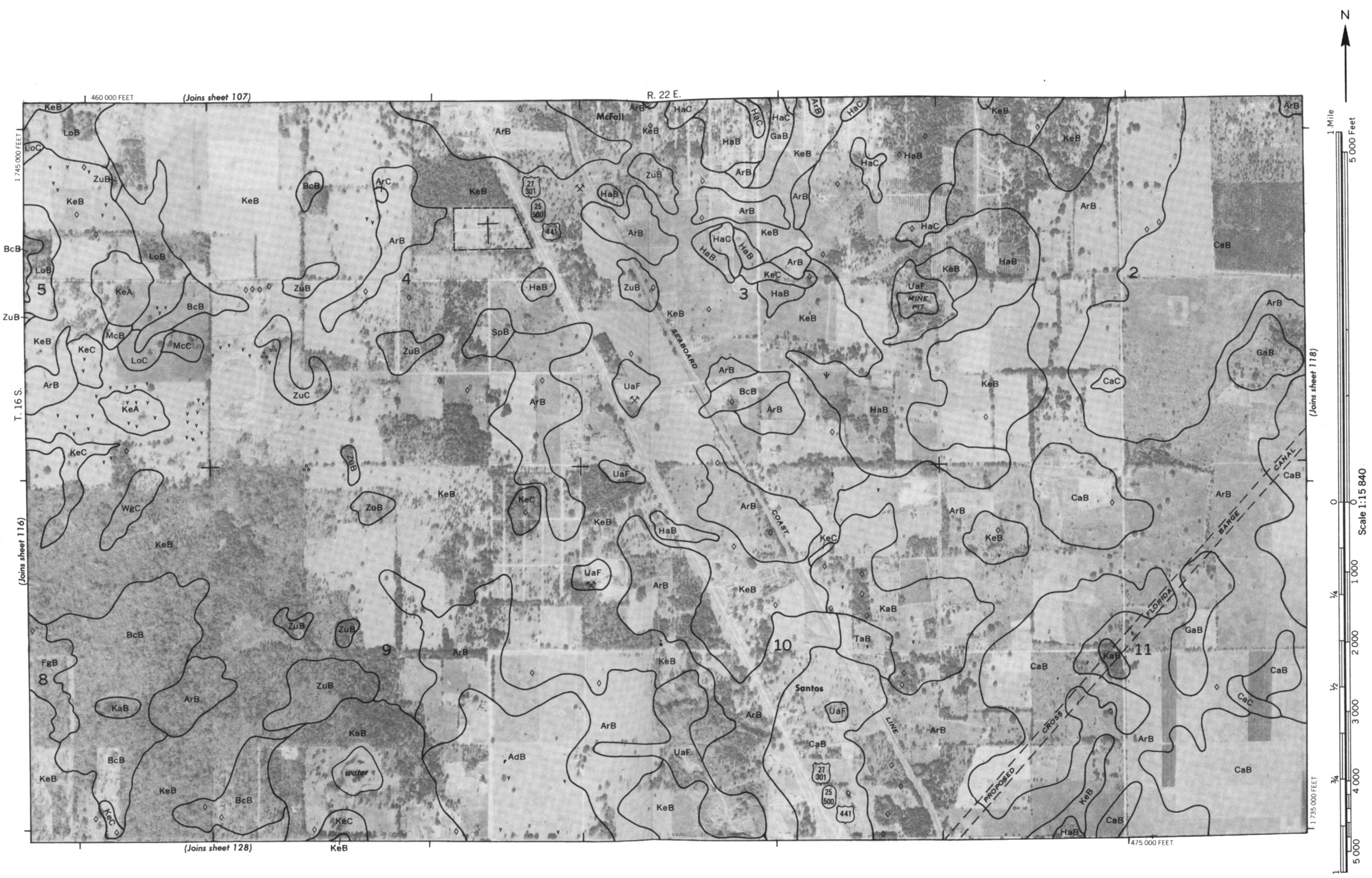
115
N
425 000 FEET
R. 21 E.
(Joins sheet 105)
(106)
1 745 000 FEET
T. 16 S.
(Joins sheet 114)
(Joins sheet 116)
40 000 FEET
1 735 000 FEET
(Joins sheet 126)
440 000 FEET
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
CaC
CaB
ApB
ApC
KeB
KeC
ArB
ArC
AtB
BcA
BcB
BcC
BoC
FeC
FgB
FmB
GaB
HaB
HaC
KaB
KeC
UaA
WaC
WeB
ZuB
ZuC
water
w
200
Martel
3
4
5
6
7
8
9
10

(116)

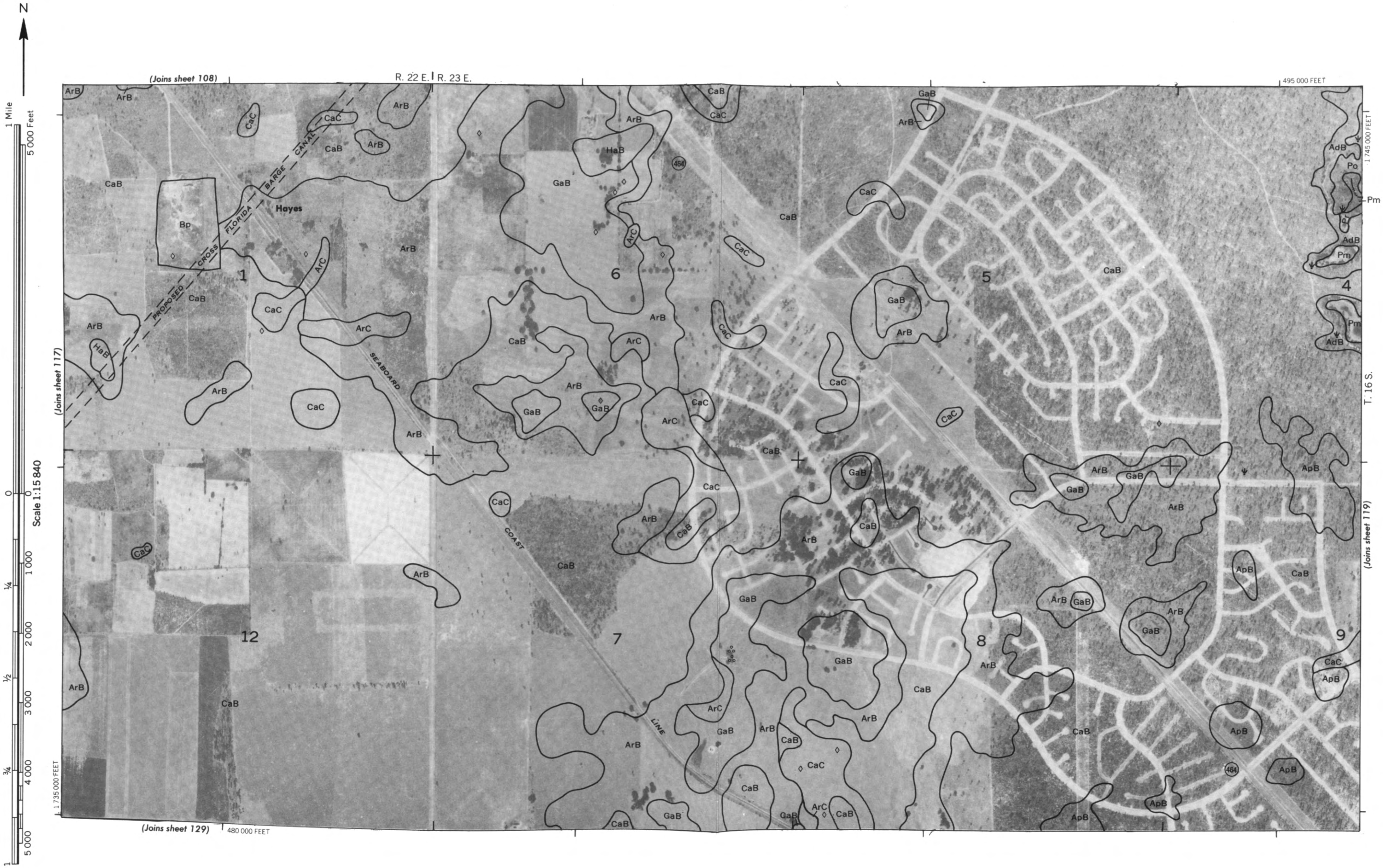
# MARION COUNTY, FLORIDA — SHEET NUMBER 116


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 106)
(Joins sheet 115)
(Joins sheet 117)
(Joins sheet 127)
R. 21 E.
R. 22 E.
T. 16 S.
455 000 FEET
445 000 FEET
1 745 000 FEET
1 735 000 FEET
Catalina de Jesus Hijuelas Grant
75
93
475A
475
water
w
1
2
5
7
8
11
12
37
KeB
KeC
KeA
ArB
ArC
ZuB
ZuC
LoB
LoC
WaC
WgB
WgC
BcB
FmB
FgB
FgC
FeB
FeC
HaB
HaC
KaB
McB
McC
SpB
SpC
GaB
GaC
MaB
Ma
Bf
UaA
PB
BoC

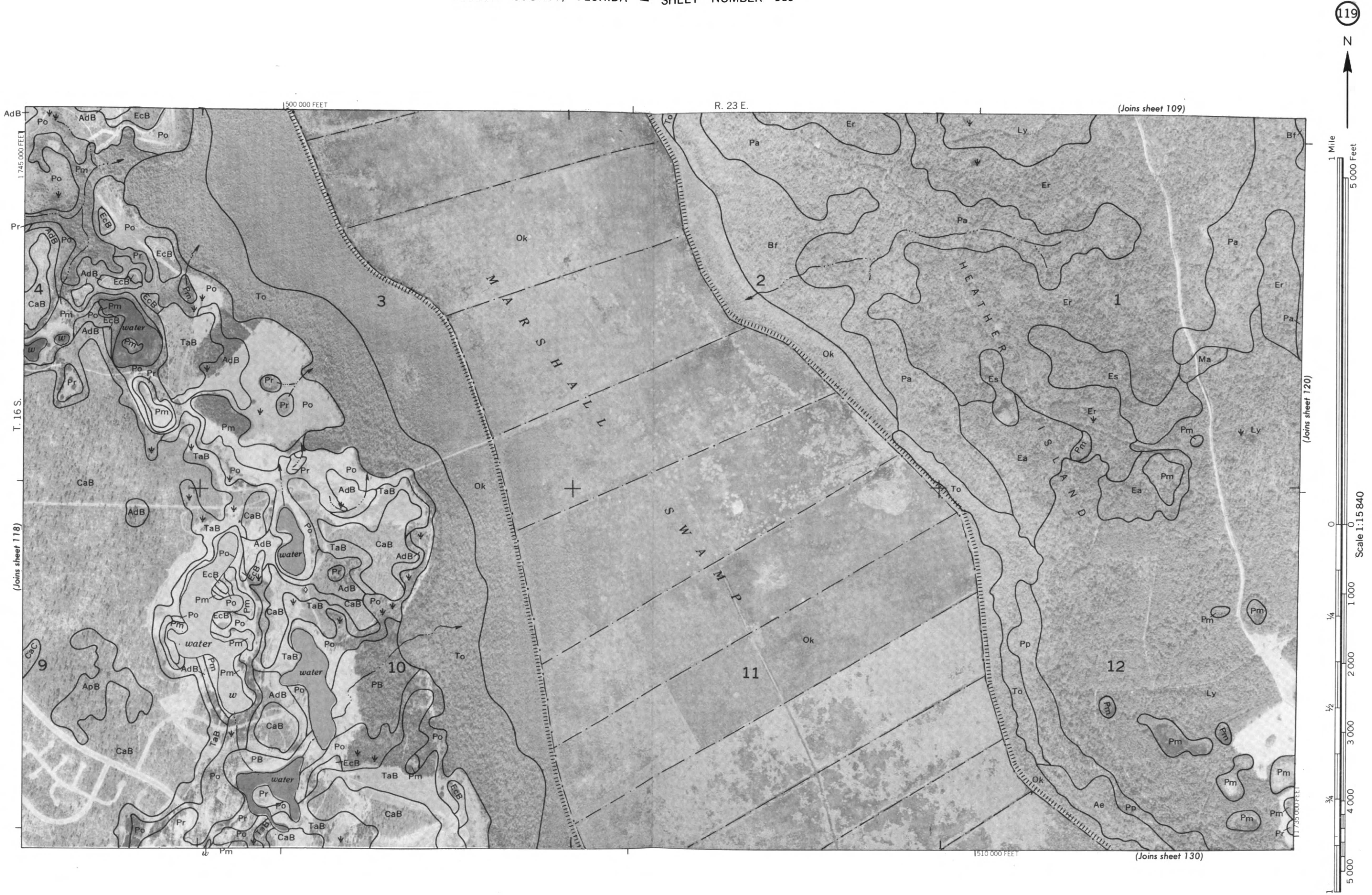
# MARION COUNTY, FLORIDA — SHEET NUMBER 117


117
N
(Joins sheet 107)
460 000 FEET
R. 22 E.
1 745 000 FEET
T. 16 S.
(Joins sheet 116)
(Joins sheet 118)
(Joins sheet 128)
475 000 FEET
1 735 000 FEET
McFall
Santos
SEABOARD
COAST
LINE
PROPOSED
CROSS
FLORIDA
BARGE
CANAL
MINE PIT
water
27
301
25
500
441
2
3
4
5
8
9
10
11
KeB
LoB
LoC
ZuB
BcB
ArC
ArB
McFall
HaC
HaB
GaB
KeA
McB
McC
KeC
ZuC
SpB
UaF
CaB
CaC
WgC
FgB
KaB
AdB
TaB
KaB
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1

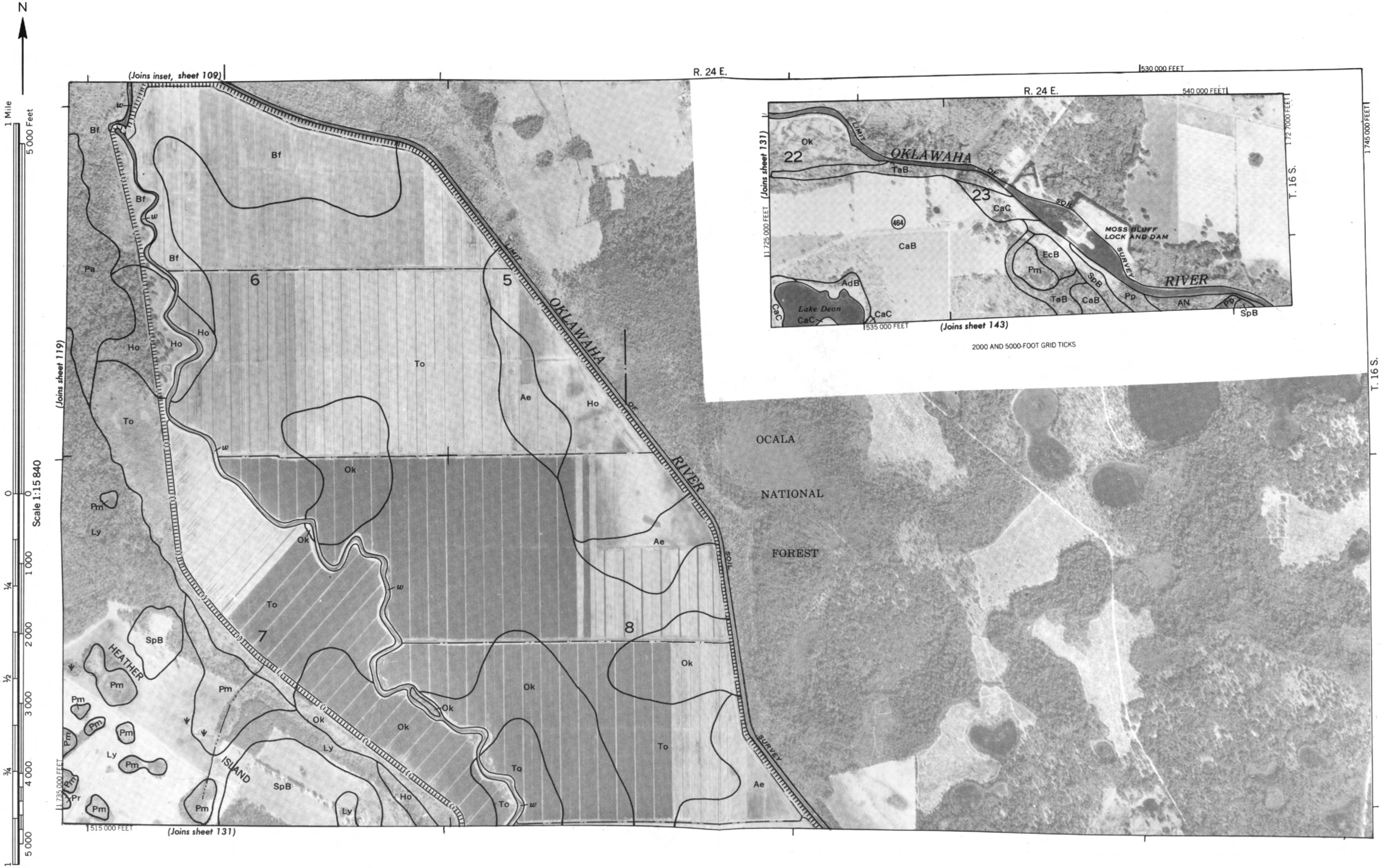
MARION COUNTY, FLORIDA — SHEET NUMBER 118


N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
¼
2 000
½
3 000
¾
4 000
1
5 000
(Joins sheet 108)
R. 22 E.
R. 23 E.
495 000 FEET
1 745 000 FEET
(Joins sheet 117)
(Joins sheet 119)
T. 16 S.
(Joins sheet 129)
480 000 FEET
1 735 000 FEET
PROPOSED CROSS FLORIDA BARGE CANAL
SEABOARD COAST LINE
Hayes
464
1
4
5
6
7
8
9
12
ArB
CaB
CaC
ArC
GaB
HaB
Bp
ApB
AdB
Po
Pm

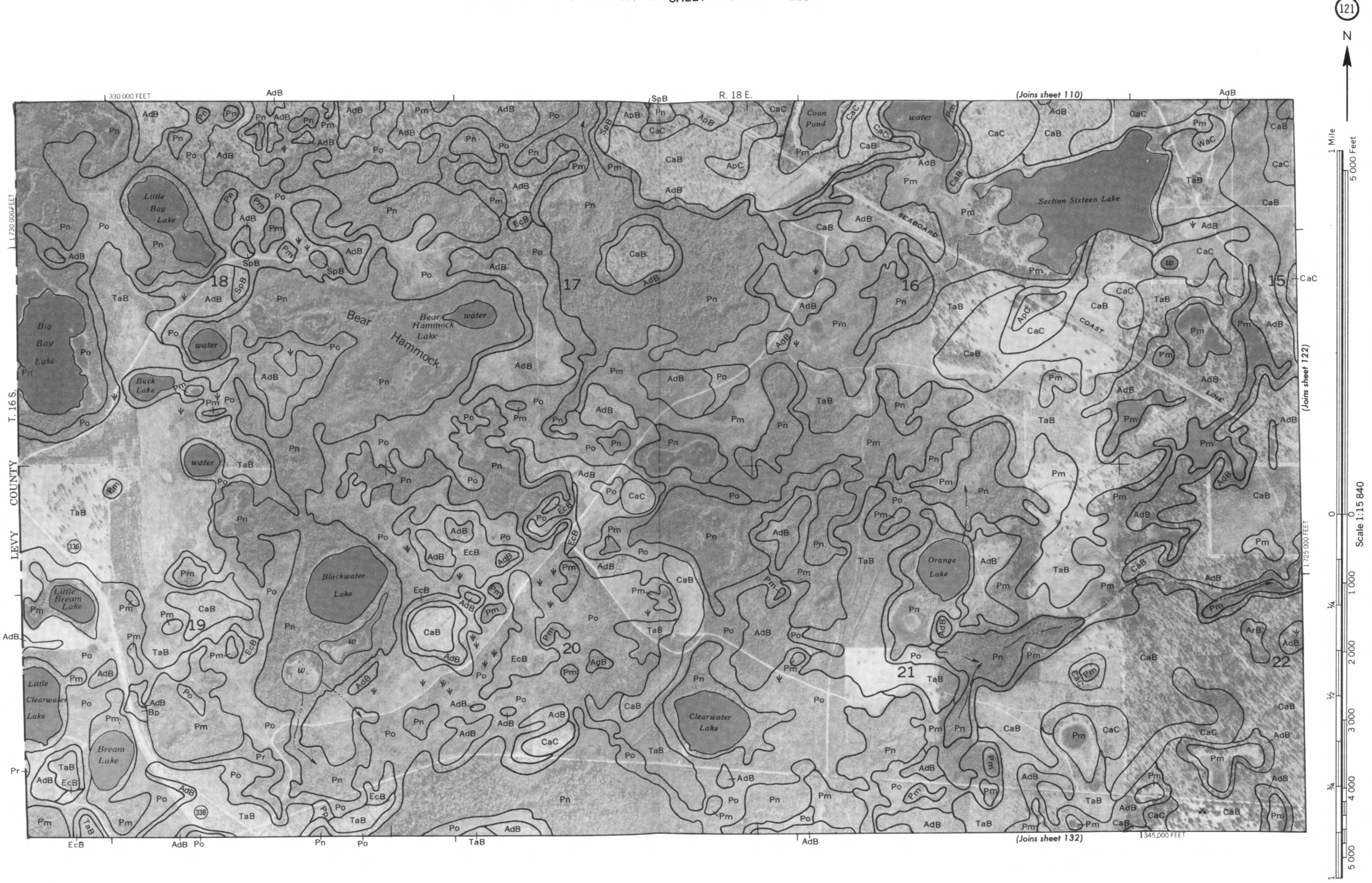
# MARION COUNTY, FLORIDA — SHEET NUMBER 119


119
N
500 000 FEET
R. 23 E.
(Joins sheet 109)
1 745 000 FEET
T. 16 S.
(Joins sheet 118)
(Joins sheet 120)
(Joins sheet 130)
510 000 FEET
1 735 000 FEET
MARSHALL SWAMP
HEATHER ISLAND
1
2
3
4
9
10
11
12
water
w
AdB
AeB
ApB
Bf
CaB
CaC
Ea
EcB
Er
Es
Ly
Ma
Ok
Pa
PB
Pm
Po
Pp
Pr
TaB
To
Ae
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

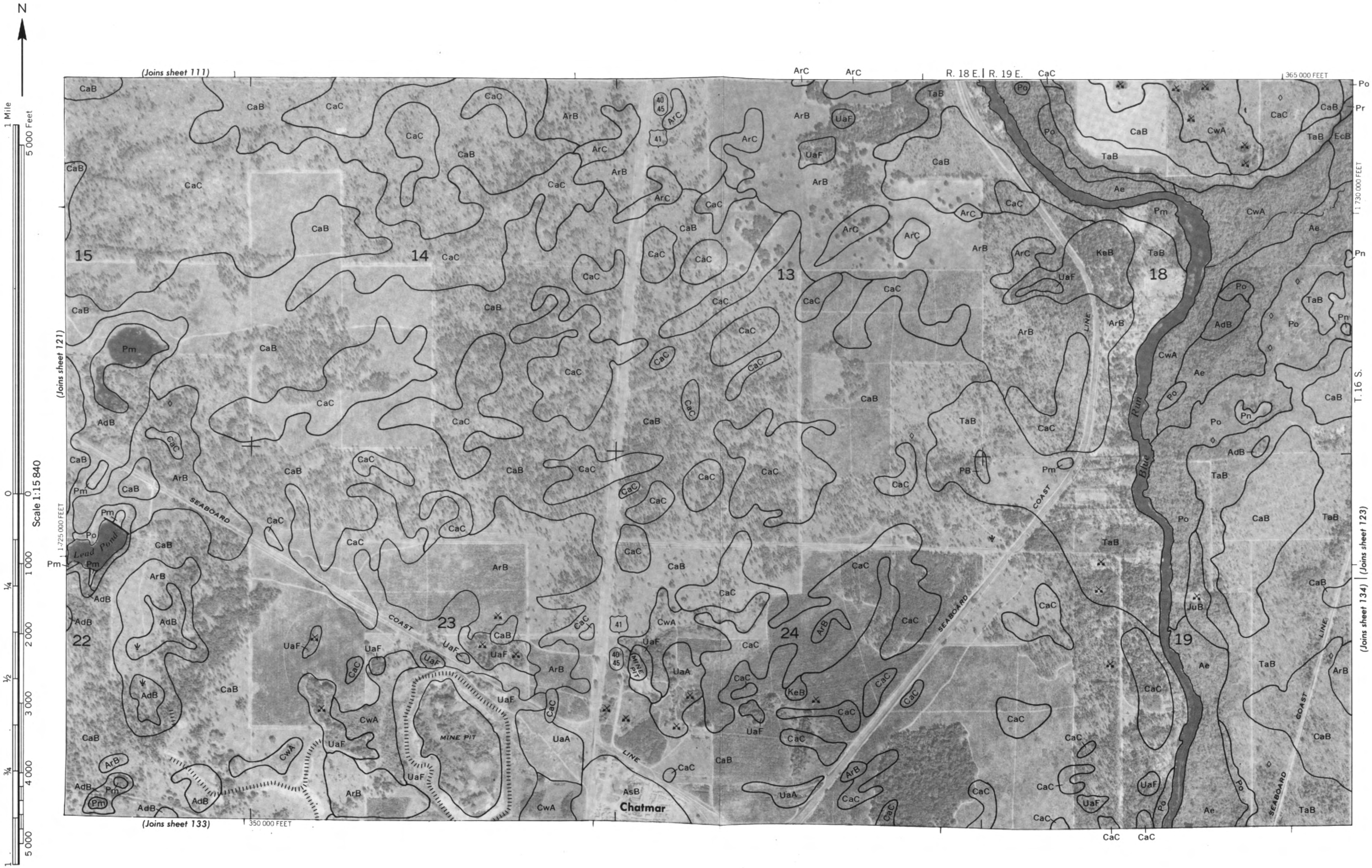
# MARION COUNTY, FLORIDA — SHEET NUMBER 120


N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
(Joins inset, sheet 109)
R. 24 E.
530 000 FEET
(Joins sheet 119)
(Joins sheet 131)
515 000 FEET
1 735 000 FEET
1 745 000 FEET
T. 16 S.
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
OCALA NATIONAL FOREST
HEATHER ISLAND
6
5
7
8
Bf
Pa
Ho
To
Ae
Ok
Pm
Ly
SpB
Pr
w
R. 24 E.
540 000 FEET
172 7000 FEET
1 725 000 FEET
(Joins sheet 131)
(Joins sheet 143)
535 000 FEET
22
23
Ok
TaB
CaC
CaB
464
MOSS BLUFF LOCK AND DAM
EcB
Pm
SpB
TaB
CaB
Pp
AN
SpB
AdB
Lake Deon
CaC
RIVER
2000 AND 5000-FOOT GRID TICKS

# MARION COUNTY, FLORIDA — SHEET NUMBER 121

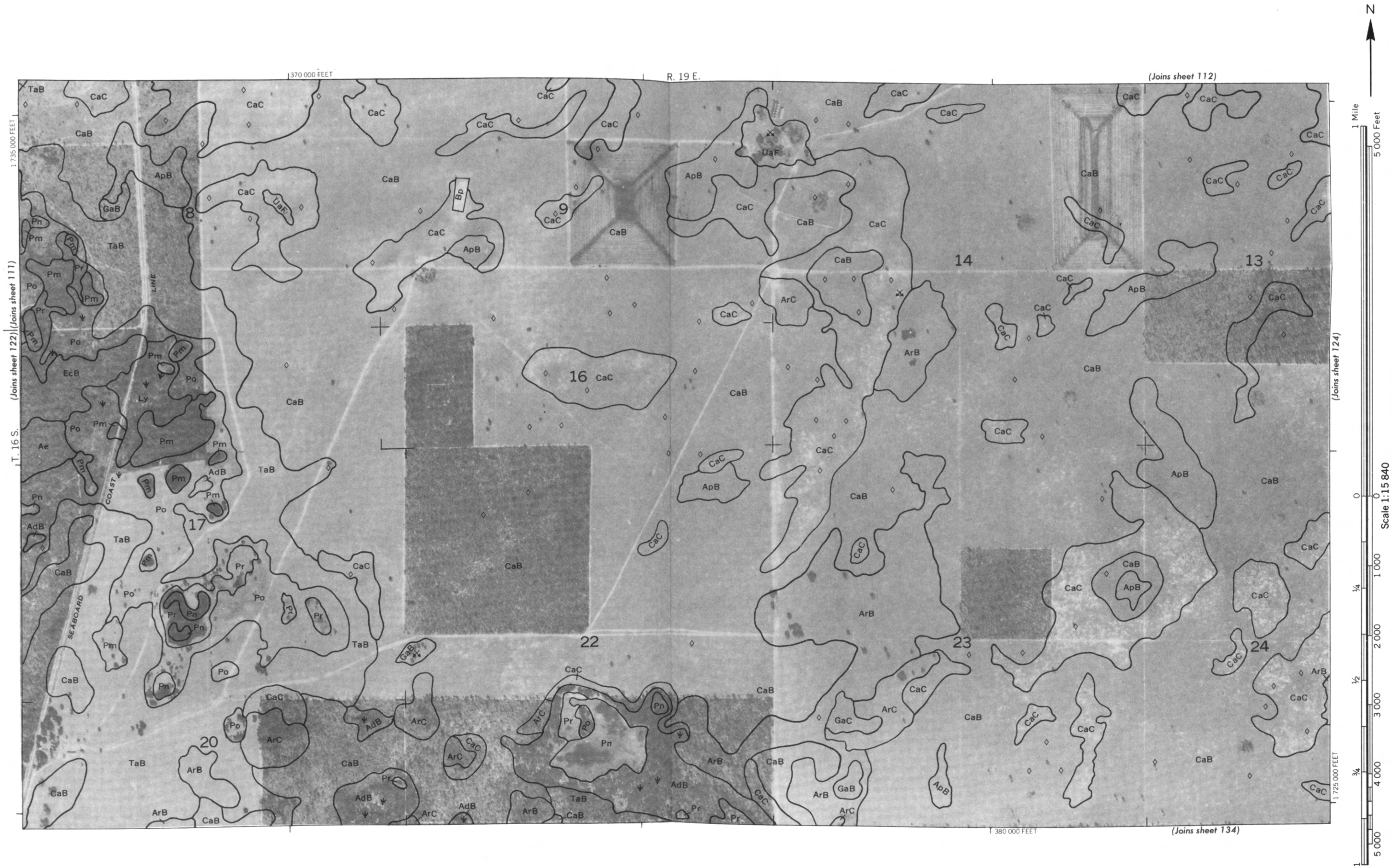

121
N
330 000 FEET
R. 18 E.
(Joins sheet 110)
(Joins sheet 122)
(Joins sheet 132)
345 000 FEET
1 730 000 FEET
1 725 000 FEET
T. 16 S.
LEVY COUNTY
Little Bay Lake
Big Bay Lake
Buck Lake
Bear Hammock
Bear Hammock Lake
Coon Pond
Section Sixteen Lake
SEABOARD
COAST
LINE
Orange Lake
Blackwater Lake
Little Bream Lake
Little Clearwater Lake
Bream Lake
Clearwater Lake
water
15
16
17
18
19
20
21
22
336
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
1000
2000
3000
4000
5000
Scale 1:15 840

MARION COUNTY, FLORIDA — SHEET NUMBER 122

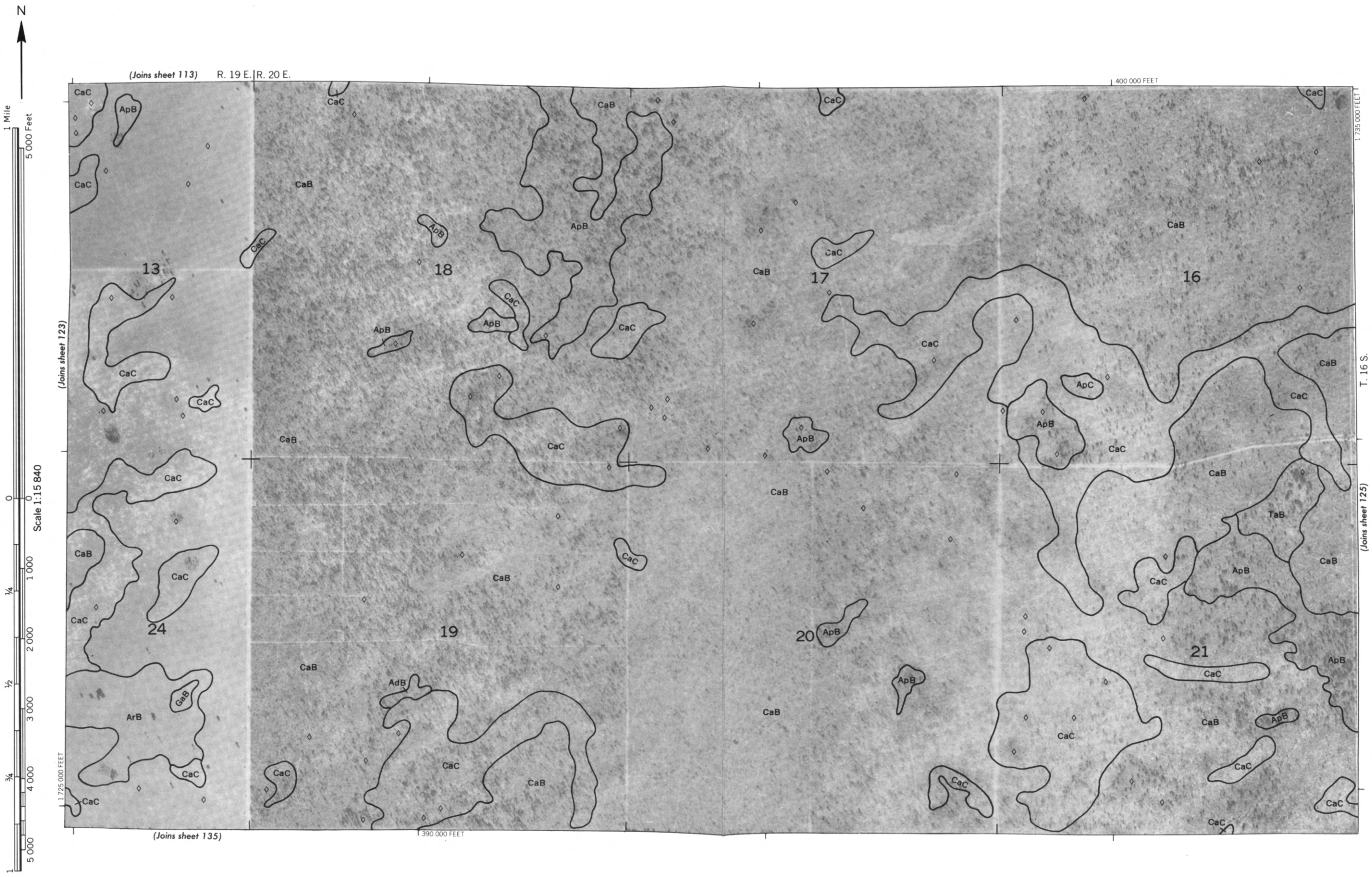

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000
(Joins sheet 111)
(Joins sheet 121)
(Joins sheet 123)
(Joins sheet 133)
(Joins sheet 134)
R. 18 E.
R. 19 E.
T. 16 S.
365 000 FEET
1 730 000 FEET
1 725 000 FEET
350 000 FEET
15
14
13
18
22
23
24
19
Lead Pond
Blue Run
SEABOARD
COAST
LINE
MINE PIT
Chatmar
41
40
45
CaB
CaC
ArB
ArC
AdB
AsB
Ae
CwA
EcB
JuB
KeB
PB
Pm
Pn
Po
Pr
TaB
UaA
UaF

## MARION COUNTY, FLORIDA — SHEET NUMBER 123

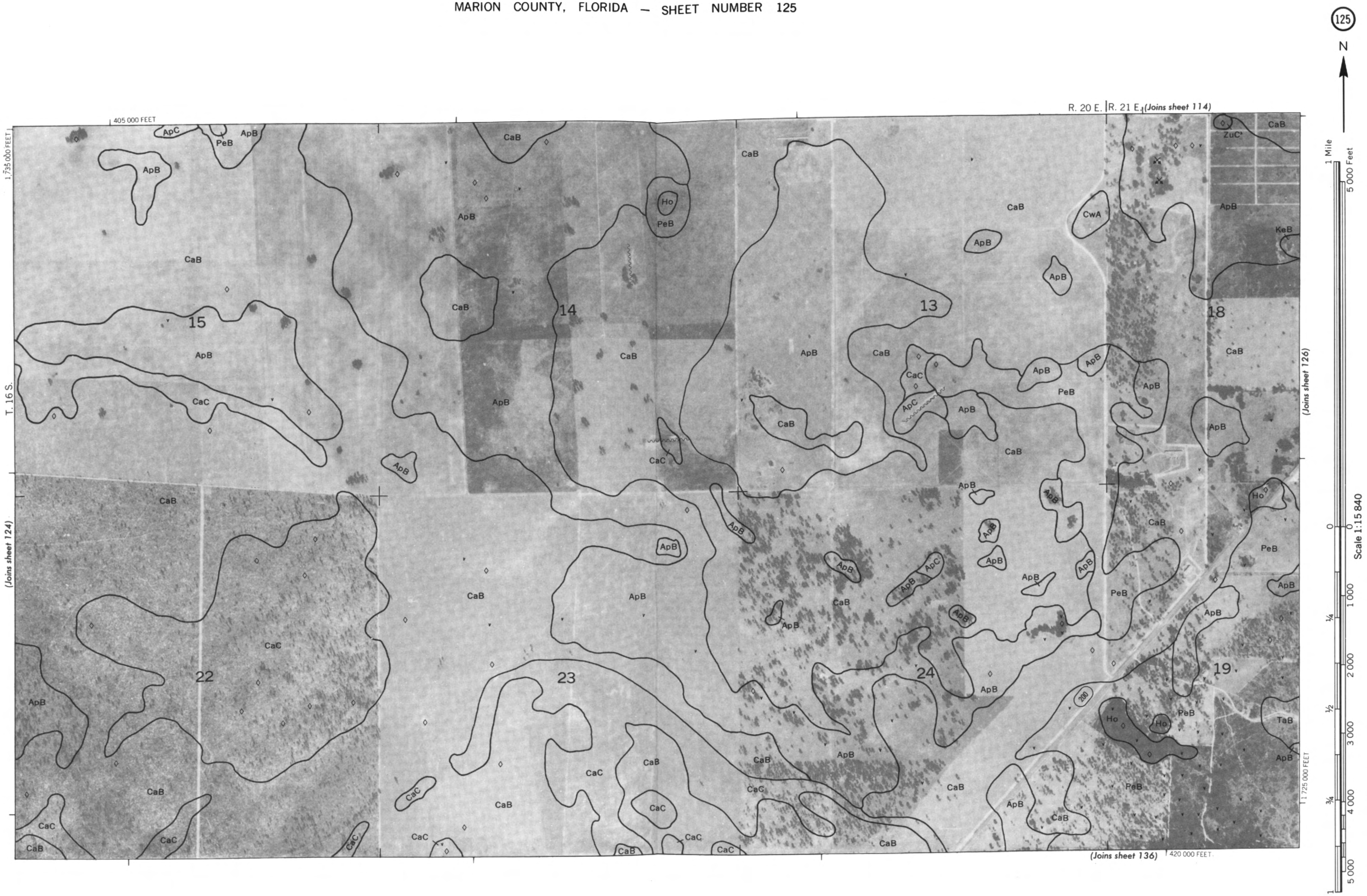
123


N
370 000 FEET
R. 19 E.
(Joins sheet 112)
1 735 000 FEET
(Joins sheet 111)
(Joins sheet 122)
T. 16 S.
(Joins sheet 124)
1 725 000 FEET
380 000 FEET
(Joins sheet 134)
SEABOARD COAST LINE
8
9
13
14
16
17
20
22
23
24
TaB
CaC
CaB
ApB
GaB
UaF
Bp
ArC
ArB
AdB
AdB
Ae
EcB
Ly
Pm
Pn
Po
Pr
GaC
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

# MARION COUNTY, FLORIDA — SHEET NUMBER 124

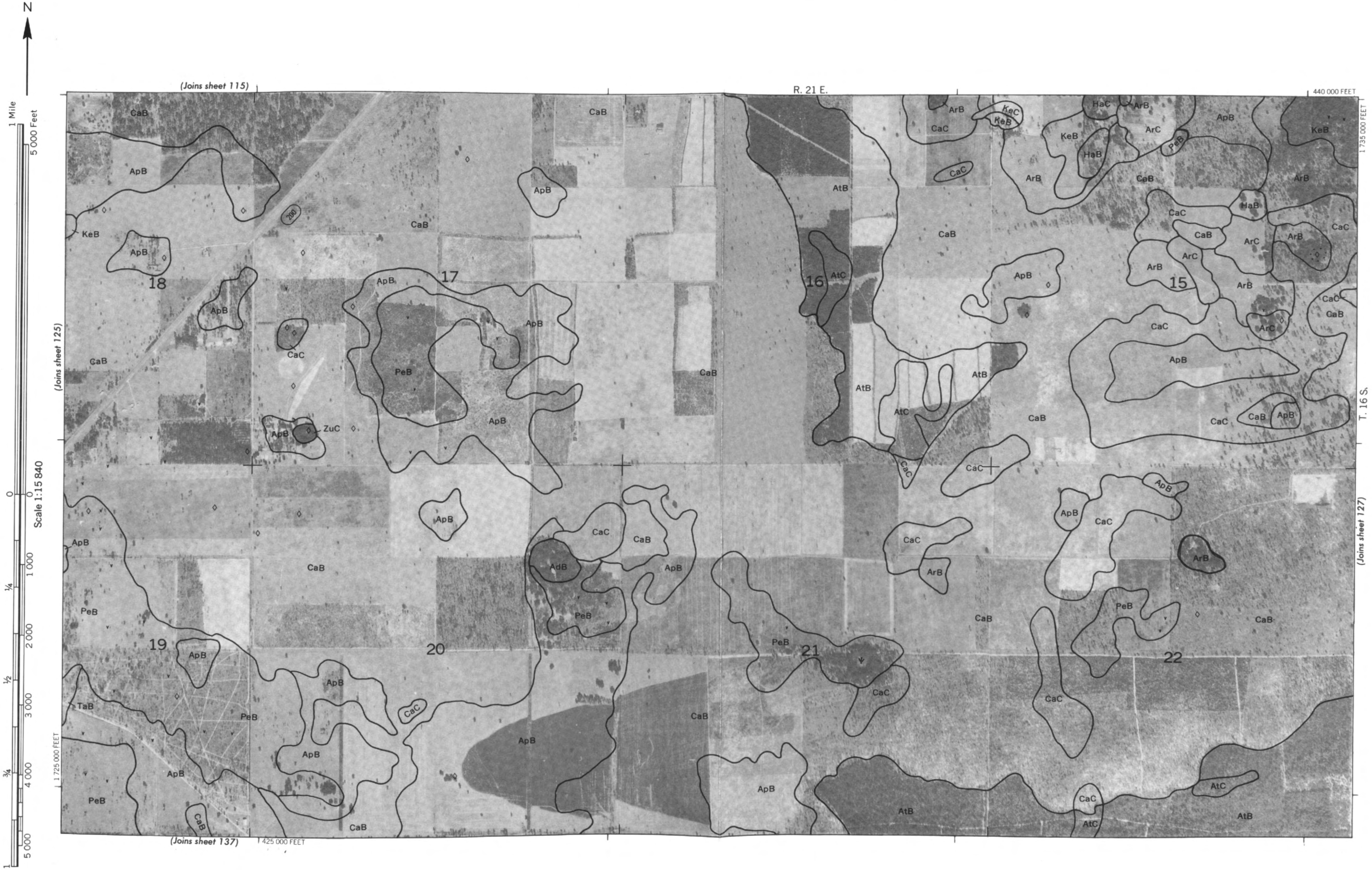

N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840
(Joins sheet 113)
R. 19 E.
R. 20 E.
400 000 FEET
1 735 000 FEET
(Joins sheet 123)
(Joins sheet 125)
T. 16 S.
1 725 000 FEET
390 000 FEET
(Joins sheet 135)
13
18
17
16
24
19
20
21
CaC
ApB
CaB
ApC
AdB
ArB
GaB
TaB

MARION COUNTY, FLORIDA — SHEET NUMBER 125

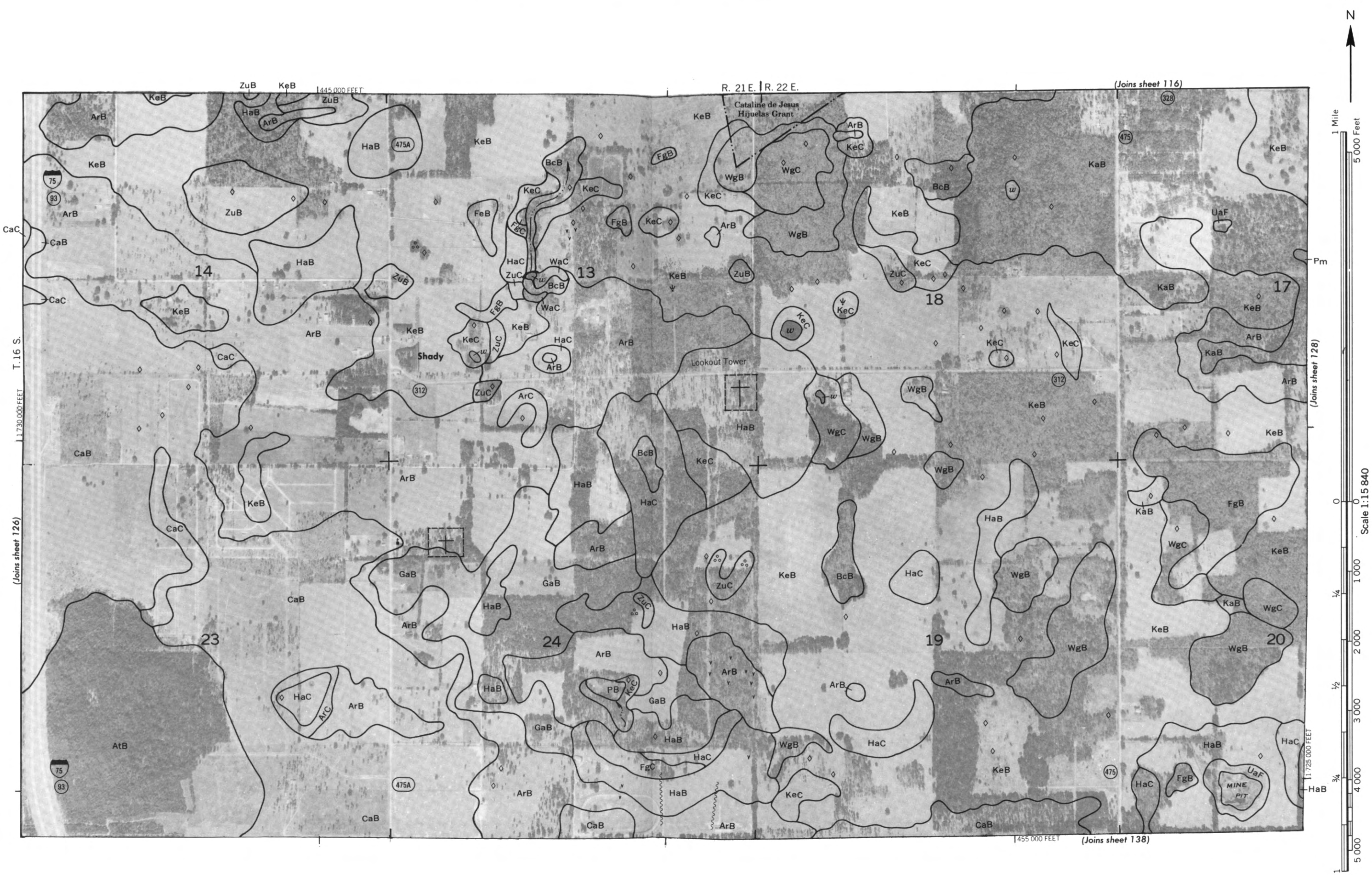


125
N
405 000 FEET
1 735 000 FEET
R. 20 E.
R. 21 E.
(Joins sheet 114)
(Joins sheet 126)
(Joins sheet 124)
(Joins sheet 136)
420 000 FEET
1 725 000 FEET
T. 16 S.
13
14
15
18
19
22
23
24
200
ApC
PeB
ApB
CaB
Ho
CwA
ZuC
KeB
CaC
PeB
TaB
Scale 1:15 840
1 Mile
5 000 Feet
0
¼
½
¾
1 000
2 000
3 000
4 000
5 000

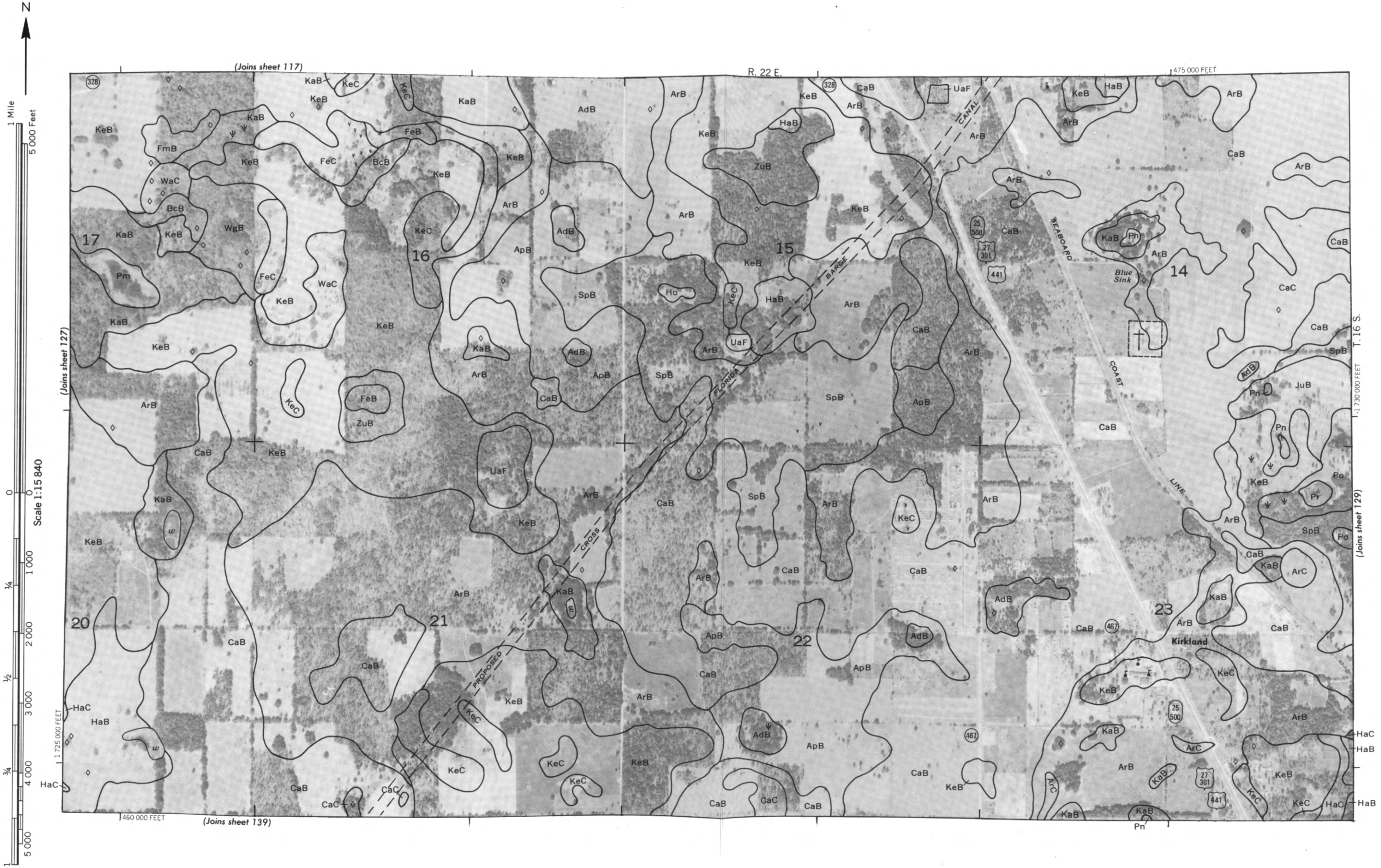
## MARION COUNTY, FLORIDA — SHEET NUMBER 126


N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840
(Joins sheet 115)
R. 21 E.
440 000 FEET
1 735 000 FEET
T. 16 S.
(Joins sheet 127)
(Joins sheet 125)
(Joins sheet 137)
425 000 FEET
1 725 000 FEET
15
16
17
18
19
20
21
22
200
CaB
ApB
KeB
CaC
ZuC
PeB
AdB
TaB
AtB
AtC
ArB
ArC
HaC
HaB
KeC
ApB
CaB

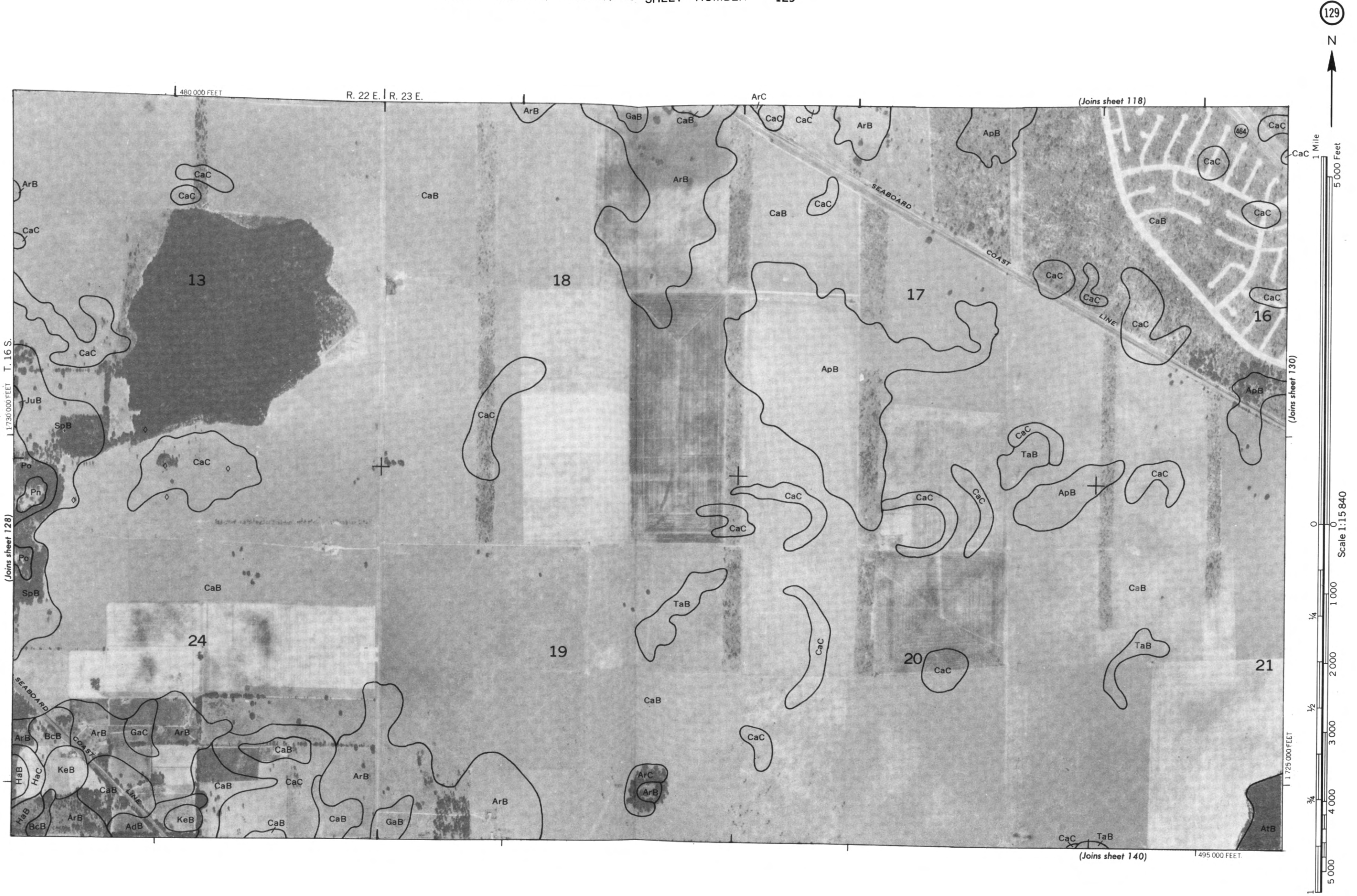
# MARION COUNTY, FLORIDA — SHEET NUMBER 127



127
N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 116)
(Joins sheet 126)
(Joins sheet 128)
(Joins sheet 138)
445 000 FEET
455 000 FEET
1 730 000 FEET
1 725 000 FEET
R. 21 E.
R. 22 E.
T. 16 S.
Cataline de Jesus Hijuelas Grant
Shady
Lookout Tower
MINE PIT
13
14
17
18
19
20
23
24
75
93
312
328
475
475A
ZuB
KeB
ArB
HaB
HaC
KeC
BcB
FeB
FgB
FgC
WaC
ZuC
CaC
CaB
ArC
GaB
AtB
PB
WgB
WgC
KaB
BcB
UaF
Pm
w


N
1 Mile
5 000 Feet
Scale 1:15 840
(Joins sheet 117)
R. 22 E.
475 000 FEET
(Joins sheet 127)
T. 16 S.
1 730 000 FEET
(Joins sheet 129)
1 725 000 FEET
460 000 FEET
(Joins sheet 139)
17
16
15
14
20
21
22
23
PROPOSED
CROSS
FLORIDA
BARGE
CANAL
SEABOARD
COAST
LINE
Blue Sink
Kirkland
328
25 500
27 301
441
467
KeB
KaB
KeC
FmB
WaC
BcB
FeC
FeB
WgB
Pm
WaC
ArB
ApB
AdB
SpB
CaB
CaC
UaF
ZuB
HaB
HaC
Ho
JuB
Pn
Pr
Po
ArC
w

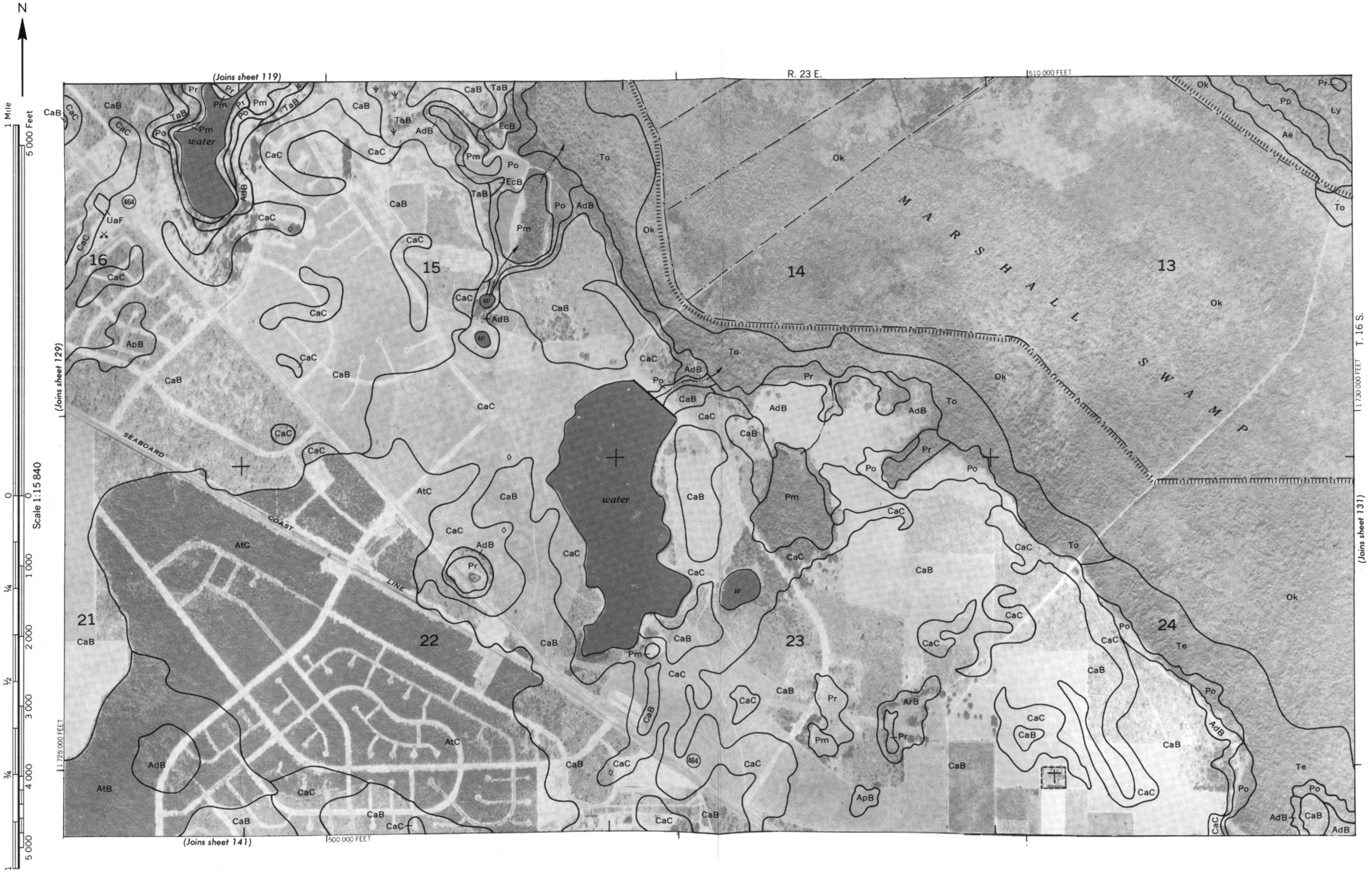
MARION COUNTY, FLORIDA — SHEET NUMBER 129

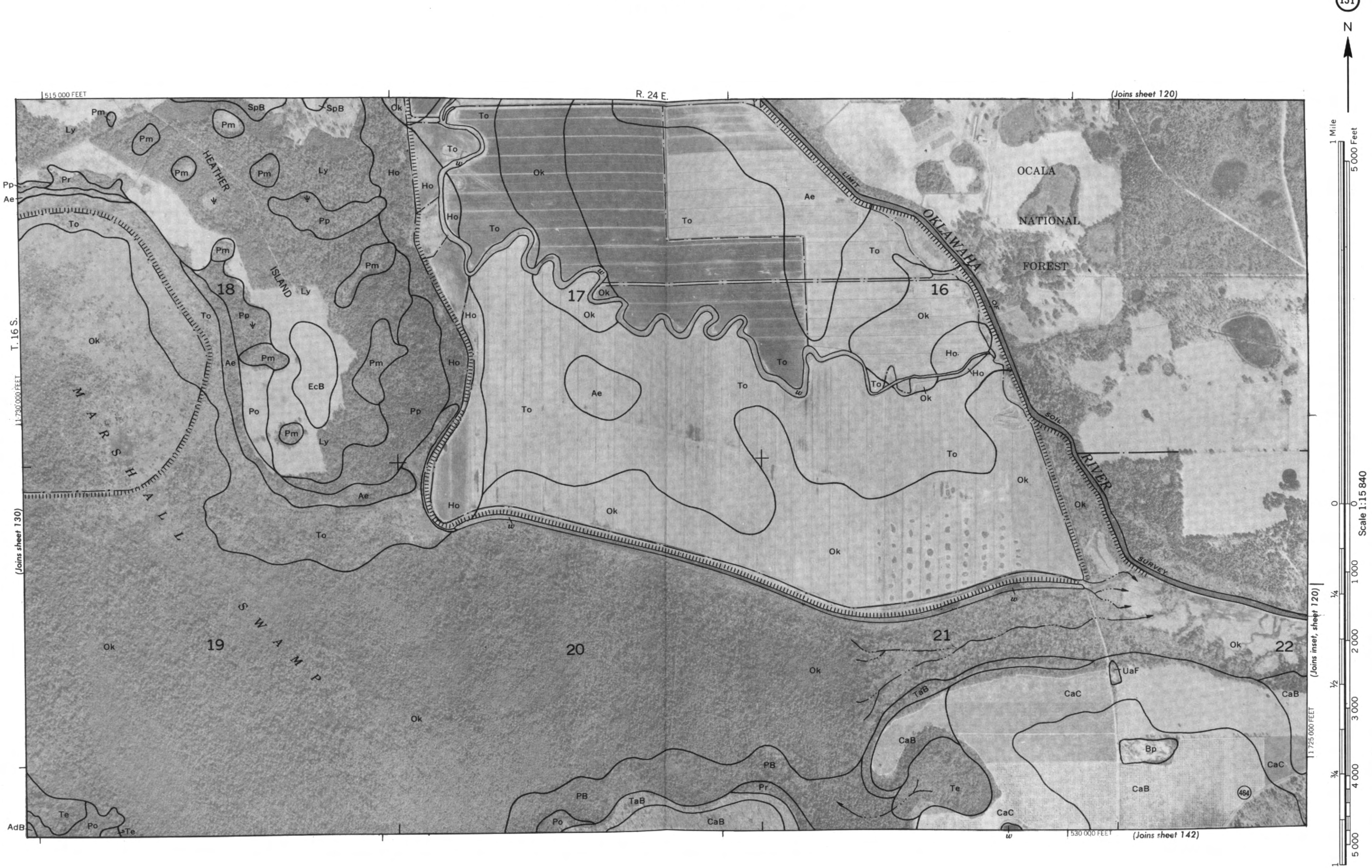


129
N
480 000 FEET
R. 22 E. | R. 23 E.
(Joins sheet 118)
(Joins sheet 130)
(Joins sheet 128)
(Joins sheet 140)
T. 16 S.
1 730 000 FEET
1 725 000 FEET
495 000 FEET
SEABOARD COAST LINE
464
13
18
17
16
24
19
20
21
ArB
ArC
CaB
CaC
ApB
GaB
JuB
SpB
Po
Pn
TaB
AtB
AdB
BcB
HaB
HaC
KeB
GaC
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1

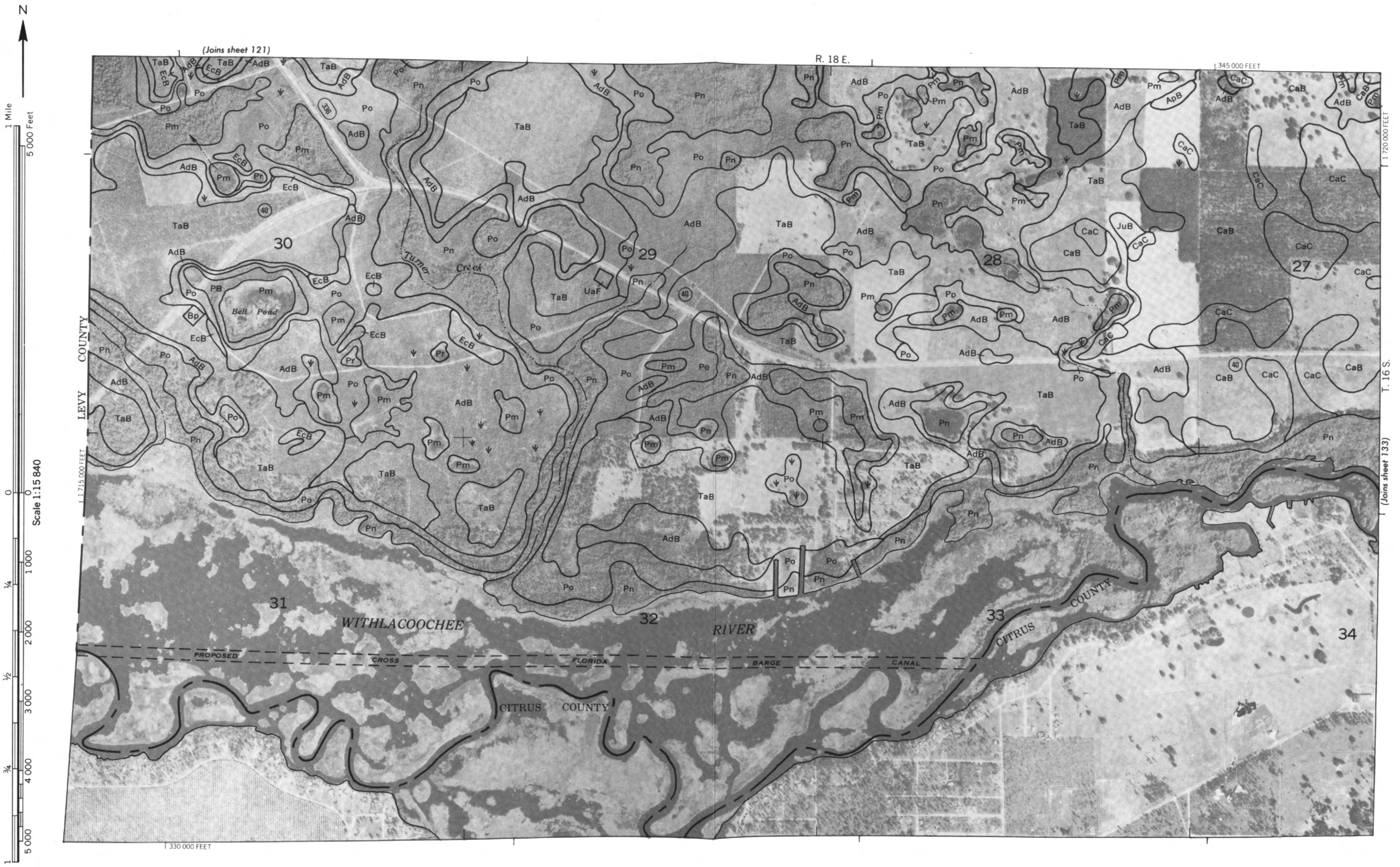
(130)

MARION COUNTY, FLORIDA — SHEET NUMBER 130

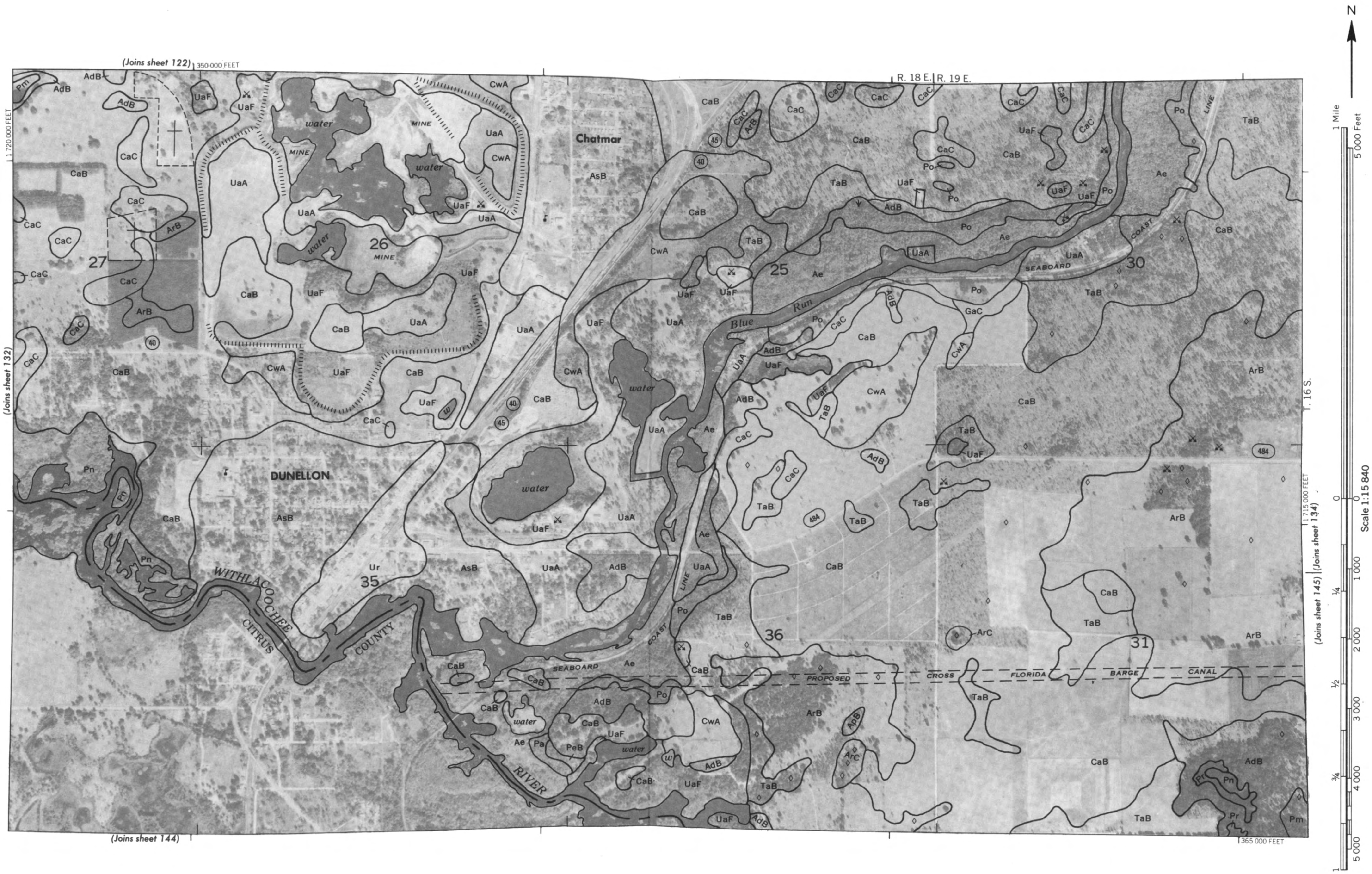

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 119)
(Joins sheet 129)
(Joins sheet 131)
(Joins sheet 141)
R. 23 E.
T. 16 S.
510 000 FEET
500 000 FEET
1 730 000 FEET
1 725 000 FEET
MARSHALL SWAMP
SEABOARD COAST LINE
464
water
w
13
14
15
16
21
22
23
24
CaB
CaC
TaB
Pr
Pm
Po
Pp
Ly
Ae
To
Ok
Te
AdB
EcB
UaF
ApB
AtC
AtB
ArB


131
N
515 000 FEET
R. 24 E.
(Joins sheet 120)
(Joins sheet 130)
(Joins inset, sheet 120)
(Joins sheet 142)
530 000 FEET
1 730 000 FEET
1 725 000 FEET
T. 16 S.
HEATHER ISLAND
MARSHALL SWAMP
OCALA NATIONAL FOREST
LIMIT OF SOIL SURVEY
OKLAWAHA RIVER
16
17
18
19
20
21
22
464
Pm
Ly
SpB
Pp
Ae
Pr
To
Ok
Ho
Po
EcB
TaB
CaB
CaC
UaF
Bp
Te
PB
AdB
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000

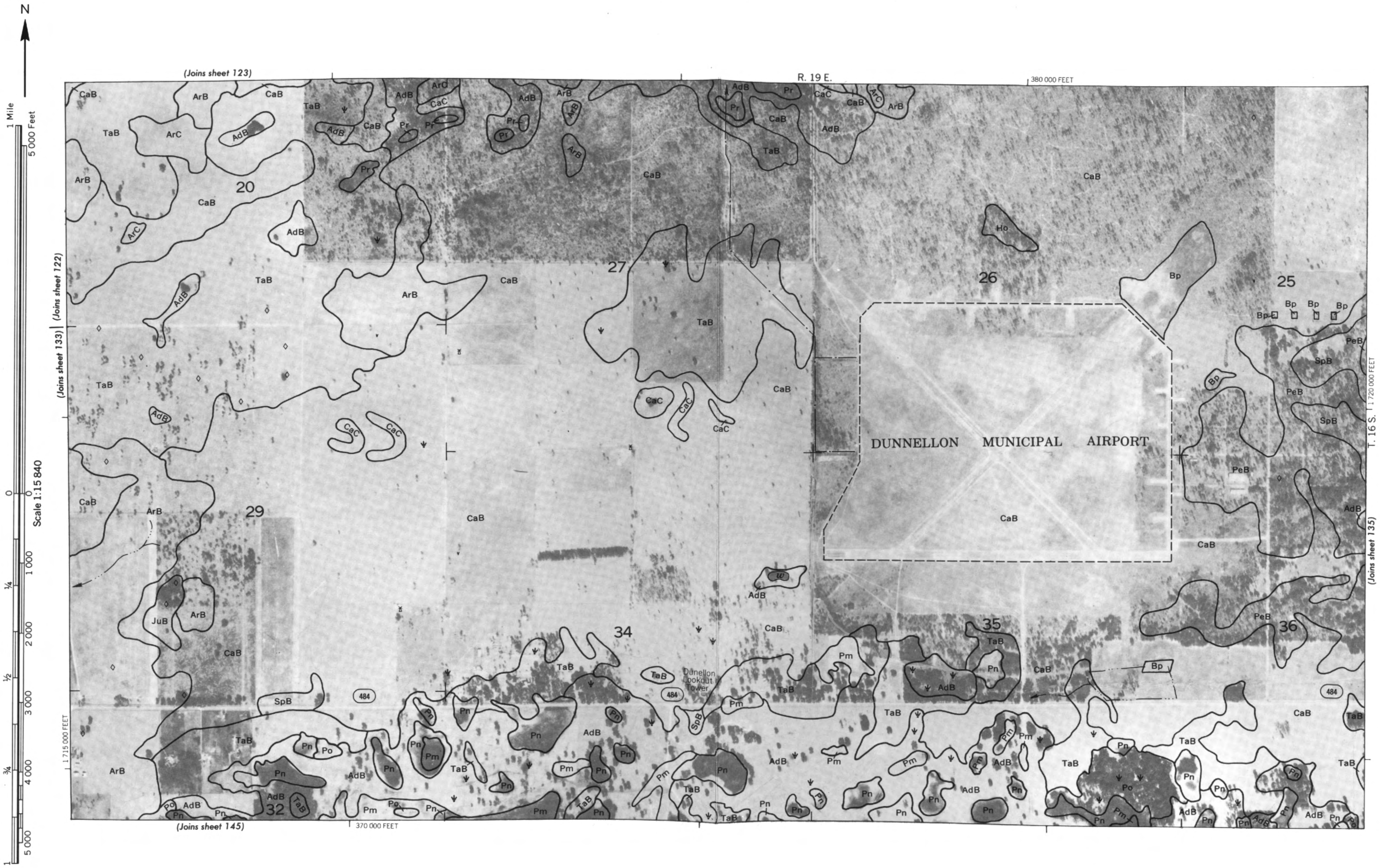
MARION COUNTY, FLORIDA — SHEET NUMBER 132


N
(Joins sheet 121)
R. 18 E.
345 000 FEET
1 720 000 FEET
T. 16 S.
(Joins sheet 133)
1 215 000 FEET
330 000 FEET
LEVY COUNTY
CITRUS COUNTY
Turner Creek
Bell Pond
WITHLACOOCHEE RIVER
PROPOSED CROSS FLORIDA BARGE CANAL
27
28
29
30
31
32
33
34
40
336
TaB
AdB
EcB
Po
Pm
Pn
Pr
PB
Bp
UaF
ApB
JuB
CaB
CaC
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

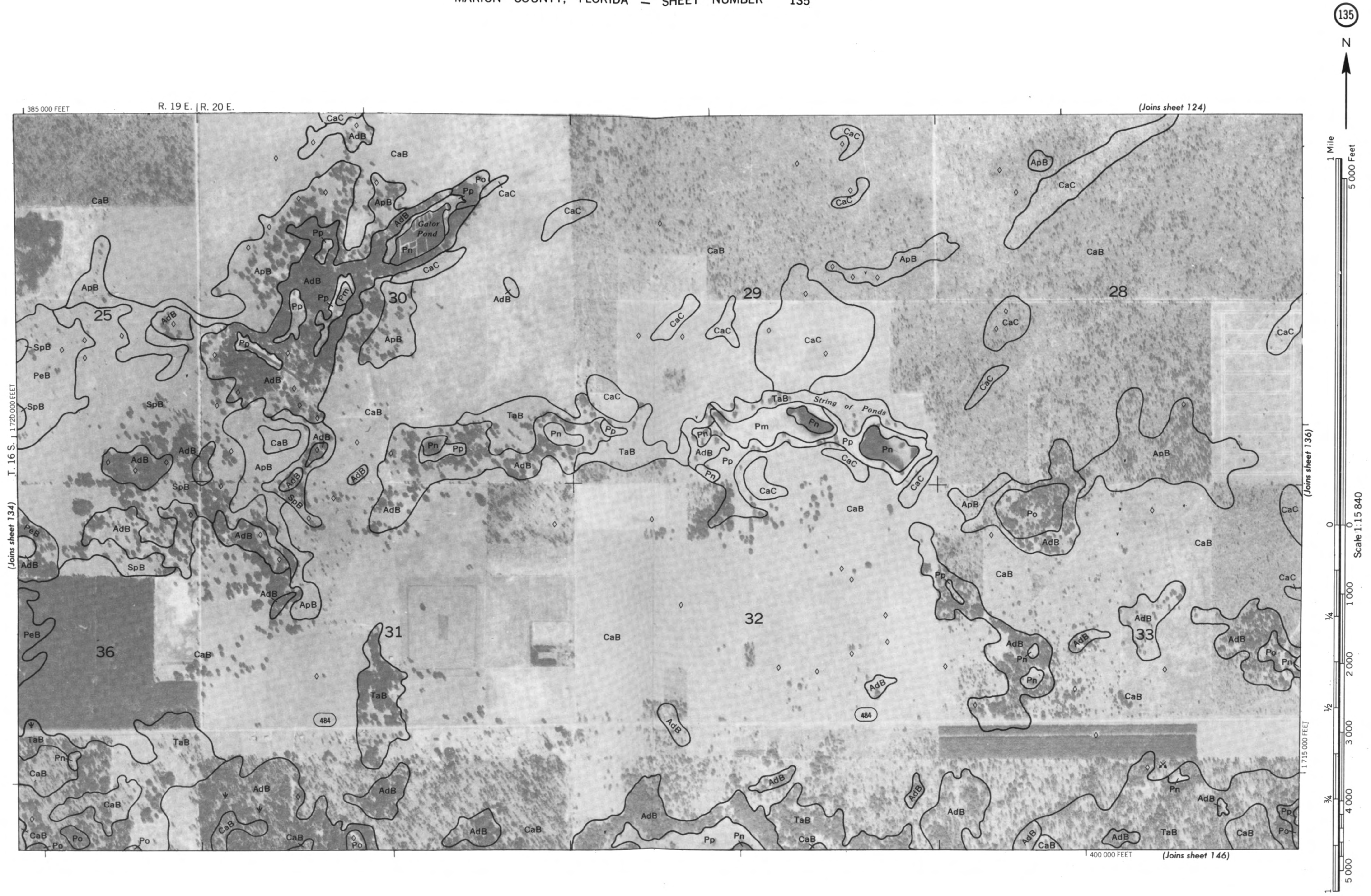
MARION COUNTY, FLORIDA — SHEET NUMBER 133


N
(Joins sheet 122)
350 000 FEET
(Joins sheet 132)
(Joins sheet 134)
(Joins sheet 145)
(Joins sheet 144)
1 720 000 FEET
1 715 000 FEET
365 000 FEET
R. 18 E.
R. 19 E.
T. 16 S.
Chatmar
DUNELLON
Blue Run
WITHLACOOCHEE RIVER
CITRUS COUNTY
SEABOARD COAST LINE
PROPOSED CROSS FLORIDA BARGE CANAL
MINE
water
25
26
27
30
31
35
36
40
45
484
AdB
AsB
ArB
ArC
Ae
CaB
CaC
CwA
GaC
Pa
PeB
Pm
Pn
Po
Pr
TaB
UaA
UaF
Ur
w
Scale 1:15 840
0
1/4
1/2
3/4
1 Mile
1 000
2 000
3 000
4 000
5 000 Feet

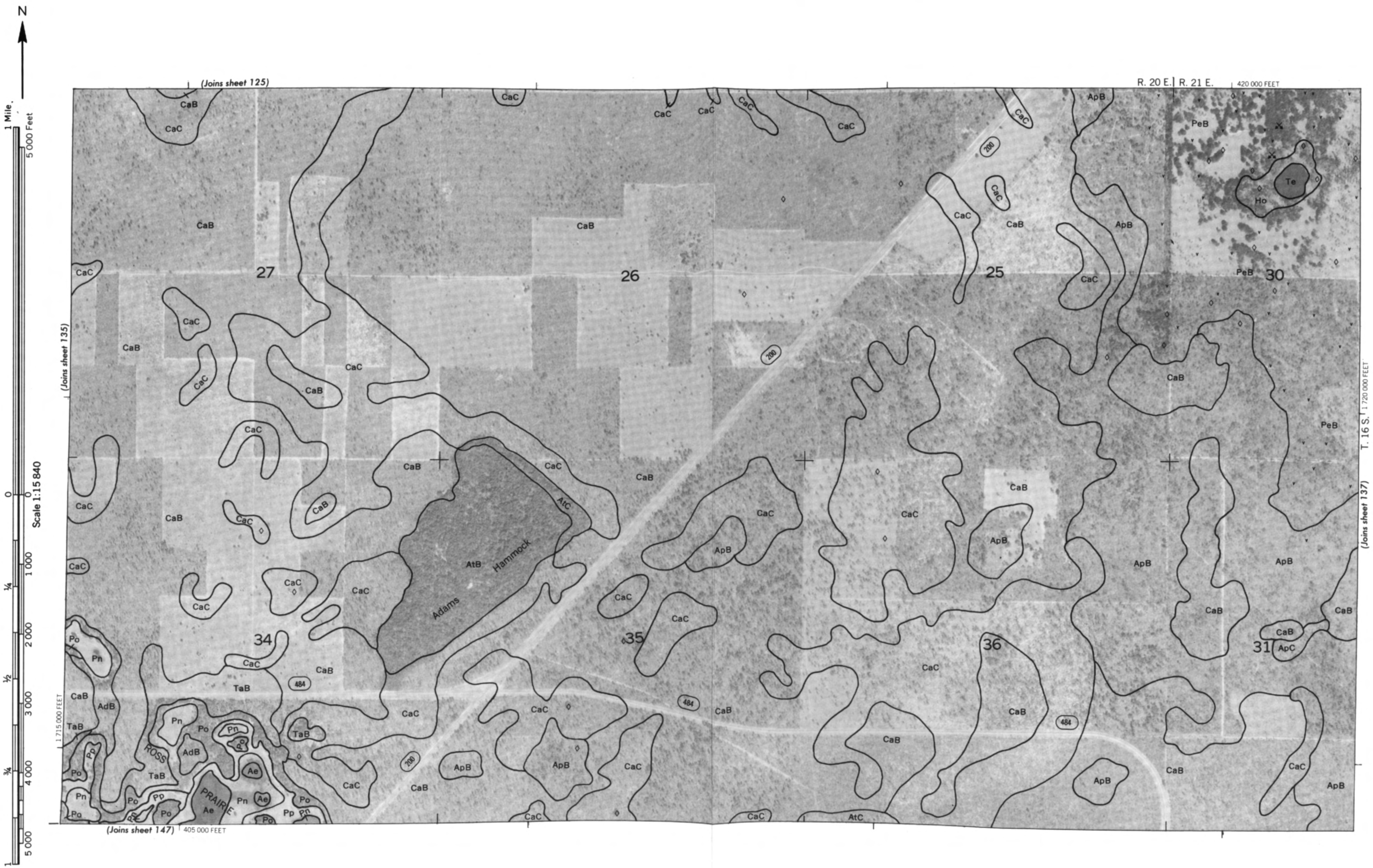
MARION COUNTY, FLORIDA — SHEET NUMBER 134

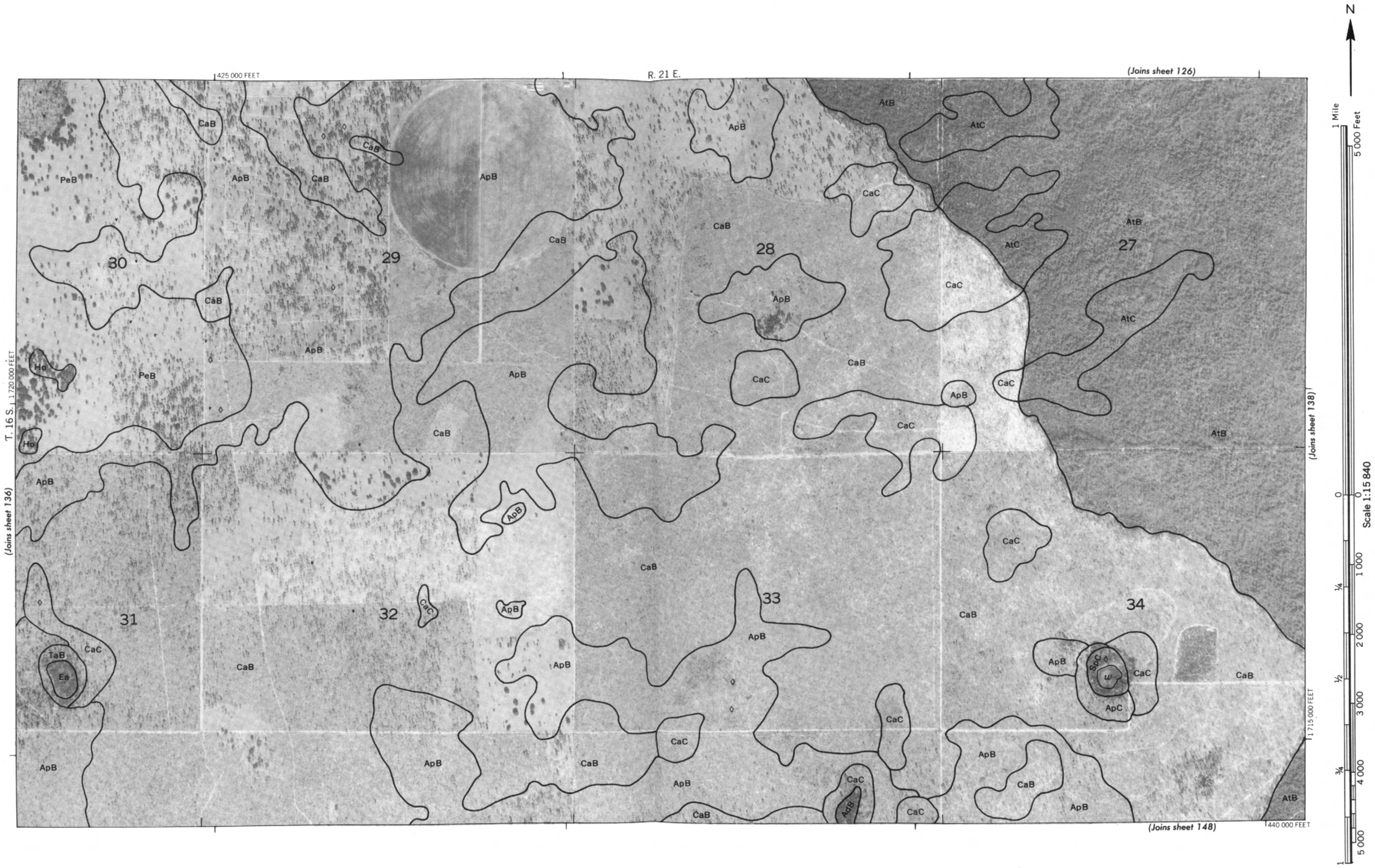

N
1 Mile
5 000 Feet
0
Scale 1:15 840
1 000
2 000
3 000
4 000
5 000
¼
½
¾
(Joins sheet 123)
(Joins sheet 122)
(Joins sheet 133)
(Joins sheet 135)
(Joins sheet 145)
R. 19 E.
380 000 FEET
370 000 FEET
1 720 000 FEET
1 715 000 FEET
T. 16 S.
DUNNELLON MUNICIPAL AIRPORT
Dunnellon Lookout Tower
484
20
25
26
27
29
32
34
35
36
CaB
ArB
TaB
ArC
AdB
ArC
CaC
Pr
Ho
Bp
PeB
SpB
JuB
Pm
Pn
Po
w

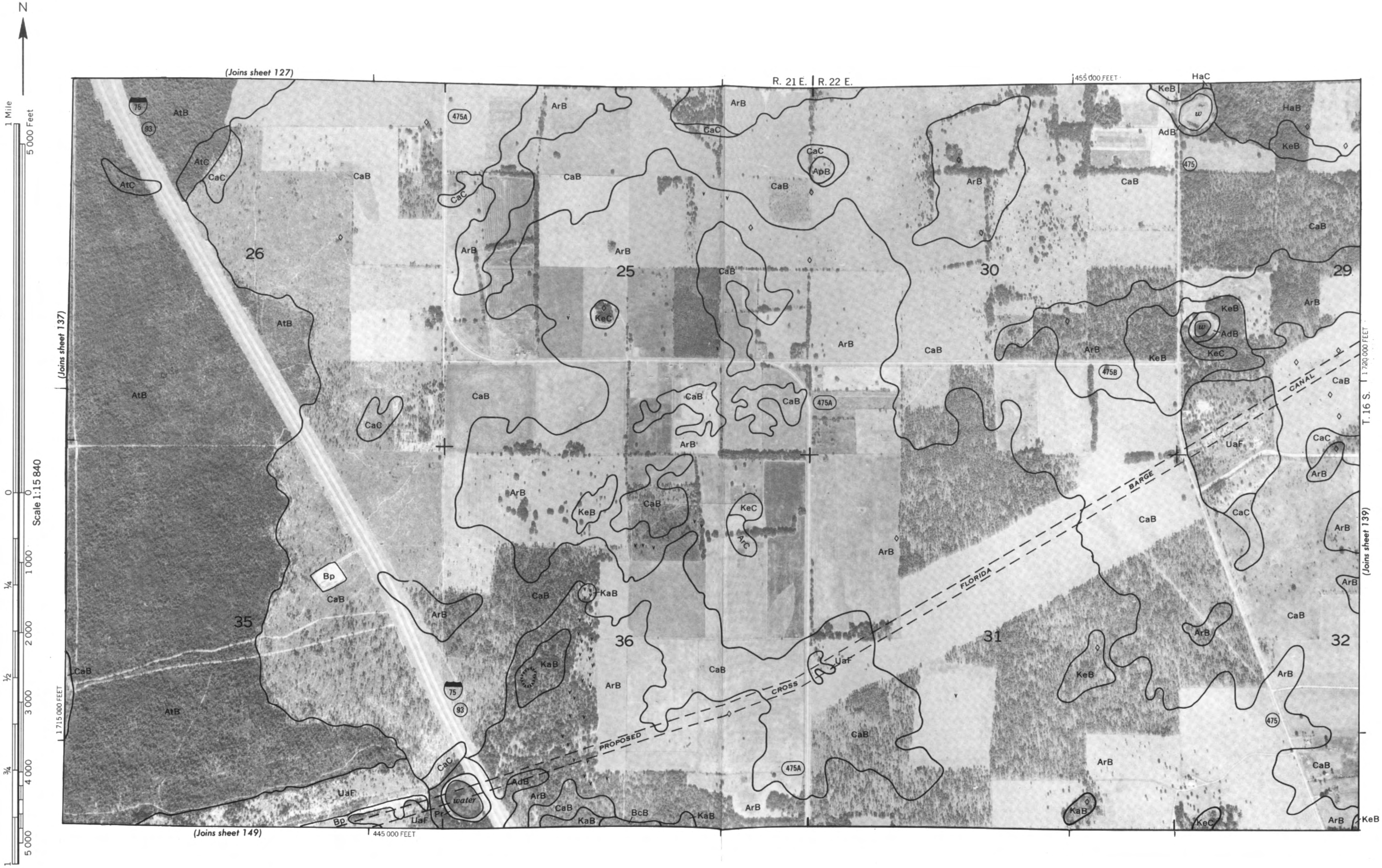
MARION COUNTY, FLORIDA — SHEET NUMBER 135


135
N
385 000 FEET
R. 19 E.
R. 20 E.
(Joins sheet 124)
(Joins sheet 134)
(Joins sheet 136)
(Joins sheet 146)
T. 16 S.
1 720 000 FEET
1 715 000 FEET
400 000 FEET
Gator Pond
String of Ponds
25
28
29
30
31
32
33
36
484
CaB
CaC
AdB
ApB
SpB
PeB
TaB
Pp
Pn
Pm
Po
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000

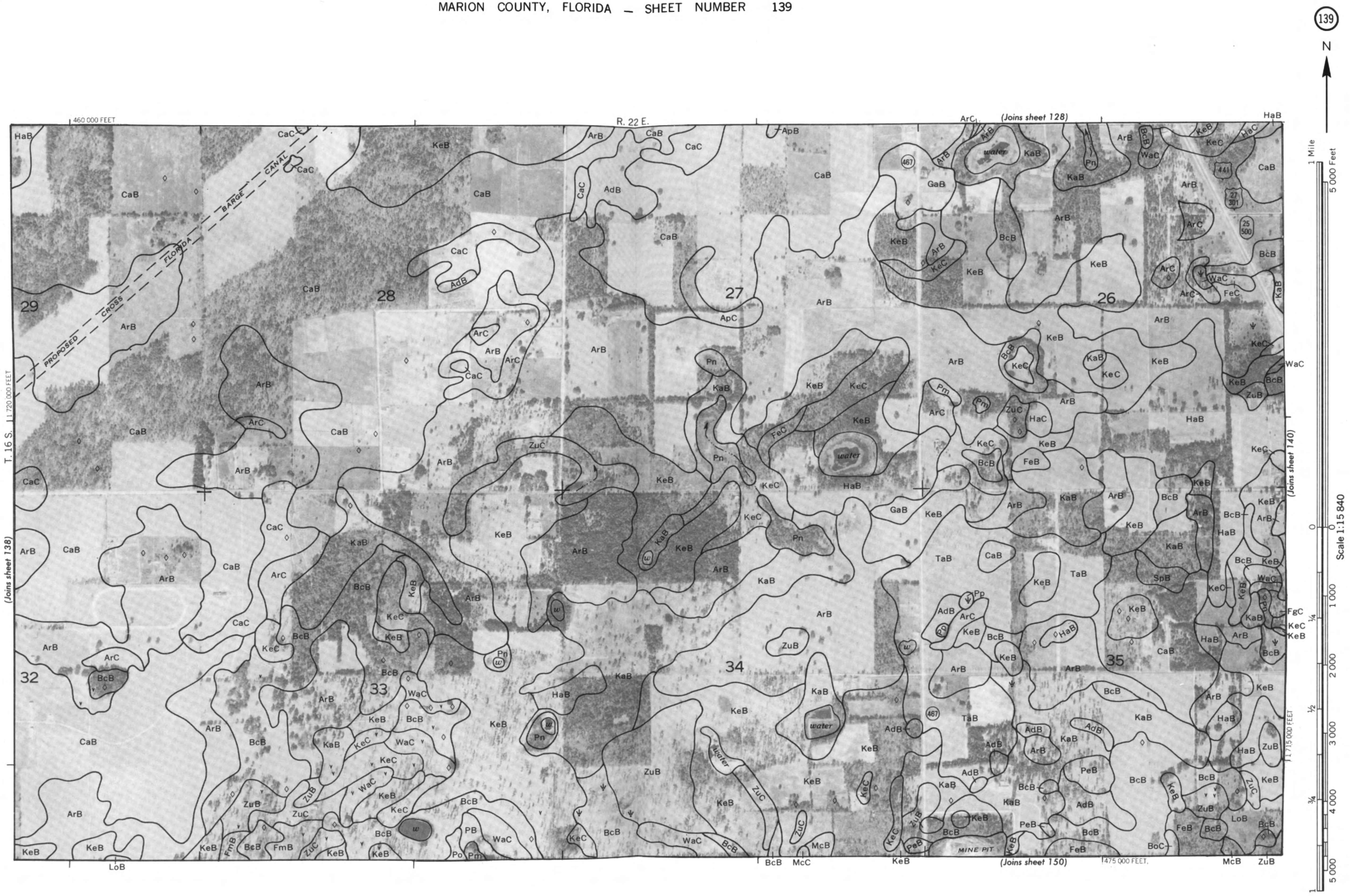
MARION COUNTY, FLORIDA — SHEET NUMBER 136

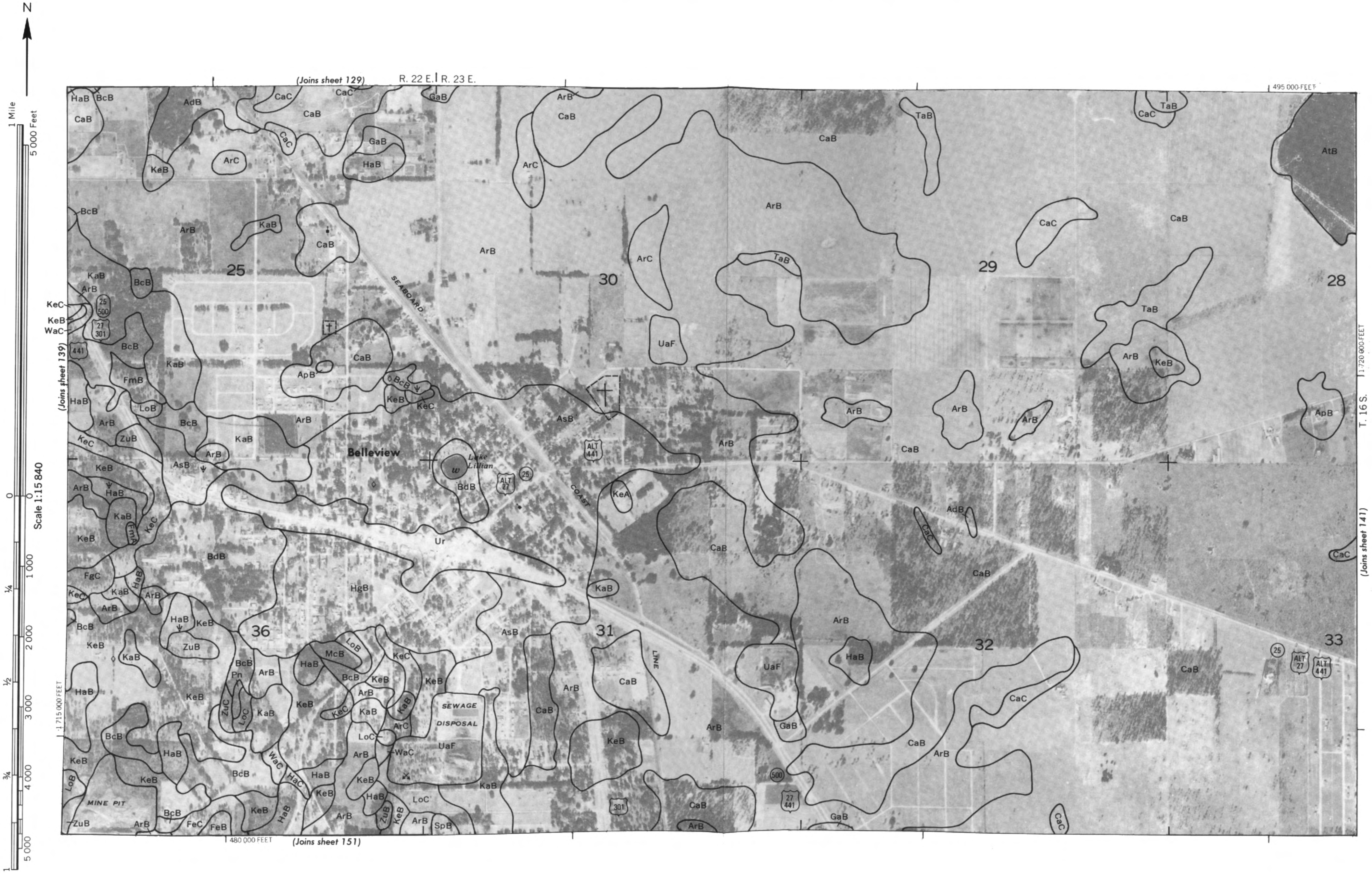

N
1 Mile
5 000 Feet
0
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
Scale 1:15 840
(Joins sheet 125)
R. 20 E.
R. 21 E.
420 000 FEET
(Joins sheet 135)
(Joins sheet 137)
T. 16 S.
1 720 000 FEET
1 715 000 FEET
(Joins sheet 147)
405 000 FEET
27
26
25
30
34
35
36
31
CaB
CaC
ApB
ApC
PeB
Te
Ho
AtB
AtC
AdB
TaB
Po
Pn
Pp
Ae
Adams
Hammock
ROSS
PRAIRIE
200
484


N
425 000 FEET
R. 21 E.
(Joins sheet 126)
CaB
CaB
ApB
AtB
AtC
PeB
ApB
CaB
ApB
CaC
CaB
CaB
AtB
30
29
28
AtC
27
CaB
ApB
CaC
AtC
ApB
T. 16 S.
1 720 000 FEET
Ho
PeB
ApB
CaB
CaC
ApB
CaC
Ho
CaB
CaC
AtB
(Joins sheet 138)
ApB
ApB
(Joins sheet 136)
CaC
CaB
31
32
CaC
ApB
33
CaB
34
TaB
CaC
ApB
ApB
SpC
CaC
Ea
CaB
ApB
w
CaB
ApC
CaC
CaC
1 715 000 FEET
ApB
ApB
CaB
ApB
ApB
CaC
CaB
ApB
AdB
CaB
CaC
AtB
(Joins sheet 148)
440 000 FEET
1 Mile
5 000 Feet
0
0
1 000
1/4
2 000
1/2
3 000
3/4
4 000
1
5 000
Scale 1:15 840


N
1 Mile
5 000 Feet
0
Scale 1:15 840
¼
1 000
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 127)
(Joins sheet 137)
(Joins sheet 139)
(Joins sheet 149)
R. 21 E.
R. 22 E.
T. 16 S.
455 000 FEET
445 000 FEET
1 720 000 FEET
1 715 000 FEET
75
93
475A
475
475B
26
25
30
29
35
36
31
32
AtB
AtC
CaC
CaB
ArB
ApB
KeB
HaC
HaB
AdB
w
KeC
ArC
KaB
Bp
UaF
water
Pr
BcB
PROPOSED
CROSS
FLORIDA
BARGE
CANAL

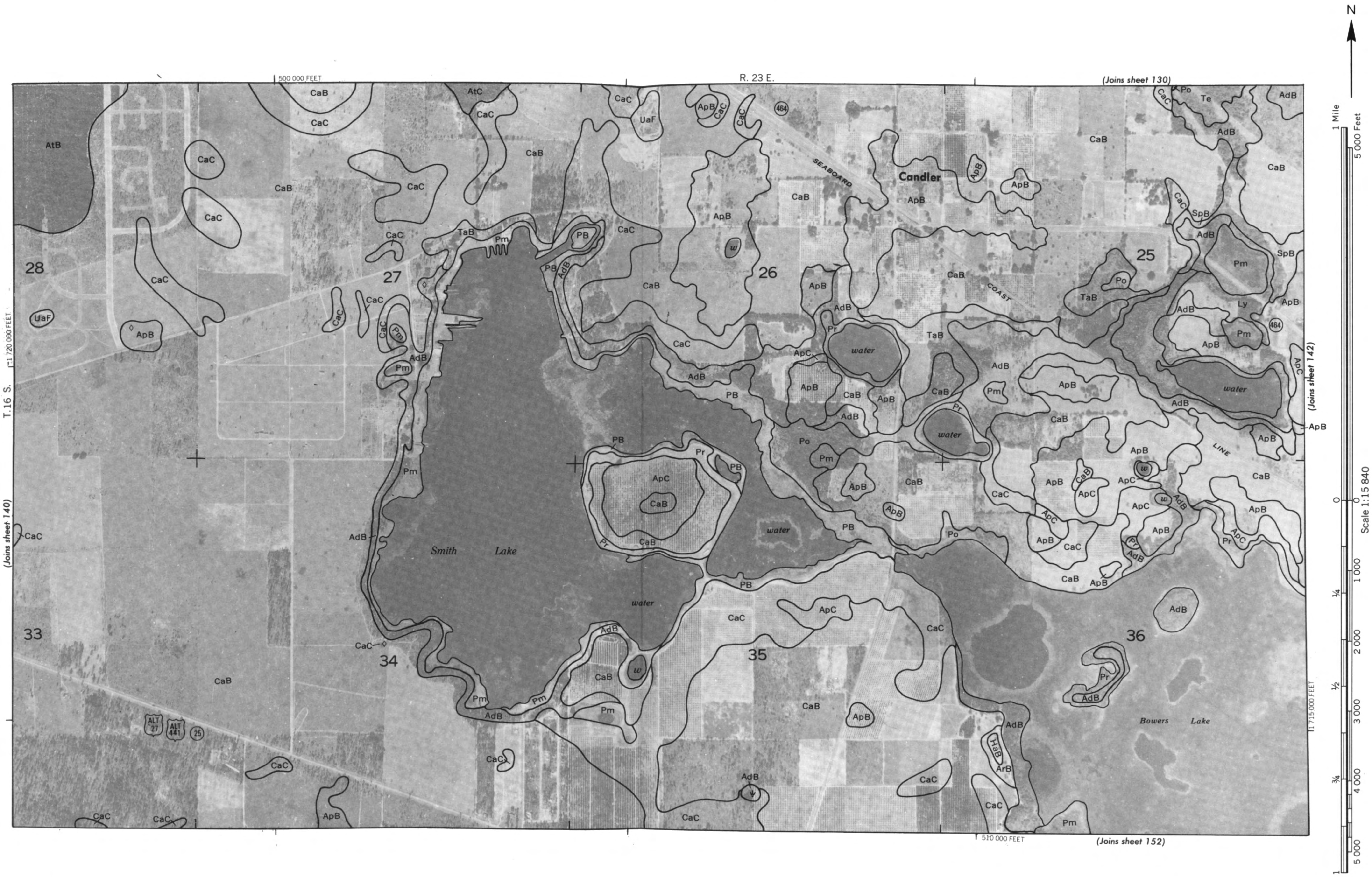
# MARION COUNTY, FLORIDA — SHEET NUMBER 139

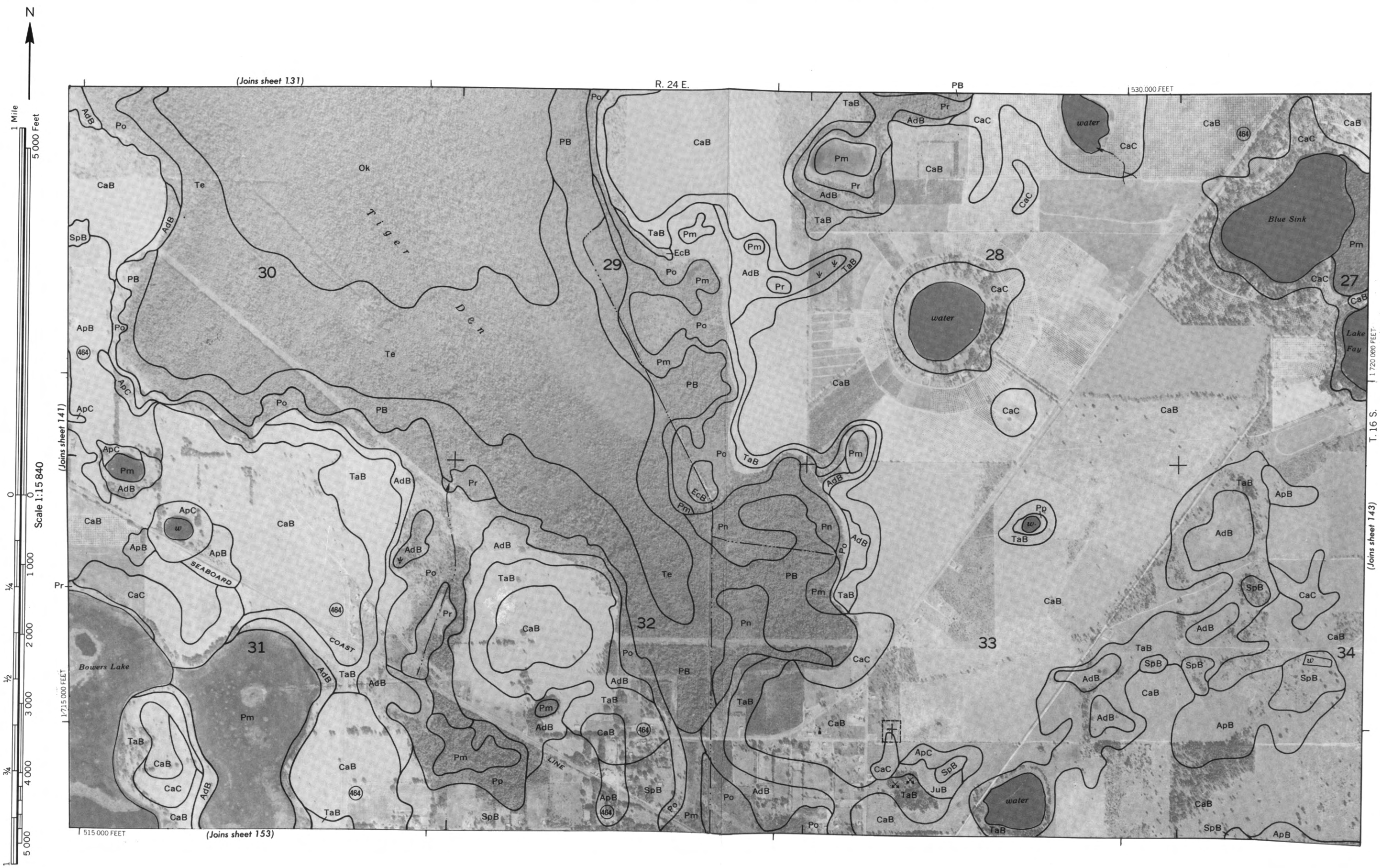

139
N
460 000 FEET
R. 22 E.
(Joins sheet 128)
(Joins sheet 140)
(Joins sheet 150)
(Joins sheet 138)
T. 16 S.
1 720 000 FEET
1 715 000 FEET
475 000 FEET.
PROPOSED CROSS FLORIDA BARGE CANAL
29
28
27
26
32
33
34
35
water
MINE PIT
467
441
27 301
25 500
HaB
CaC
KeB
CaB
ArB
AdB
ApB
ArC
ApC
AdB
GaB
BcB
WaC
KaB
Pn
Pm
Pp
ZuC
ZuB
HaC
FeC
FeB
KeC
TaB
SpB
FgC
PeB
McB
McC
LoB
FmB
PB
Po
BoC
w
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840


N
(Joins sheet 129)
R. 22 E. | R. 23 E.
495 000 FEET
(Joins sheet 139)
(Joins sheet 141)
(Joins sheet 151)
480 000 FEET
1 720 000 FEET
1 715 000 FEET
T. 16 S.
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
25
30
29
28
36
31
32
33
Belleview
Lake Lillian
SEABOARD
COAST
LINE
SEWAGE DISPOSAL
MINE PIT
25
500
27
301
441
ALT 441
ALT 27
HaB
BcB
CaB
AdB
CaC
GaB
KeB
ArC
ArB
KaB
TaB
AtB
UaF
ApB
AsB
FmB
LoB
ZuB
KeC
WaC
BdB
HgB
KeA
Ur
FgC
AdB
McB
LoC
Pn
ZuC
SpB
FeC
FeB
w

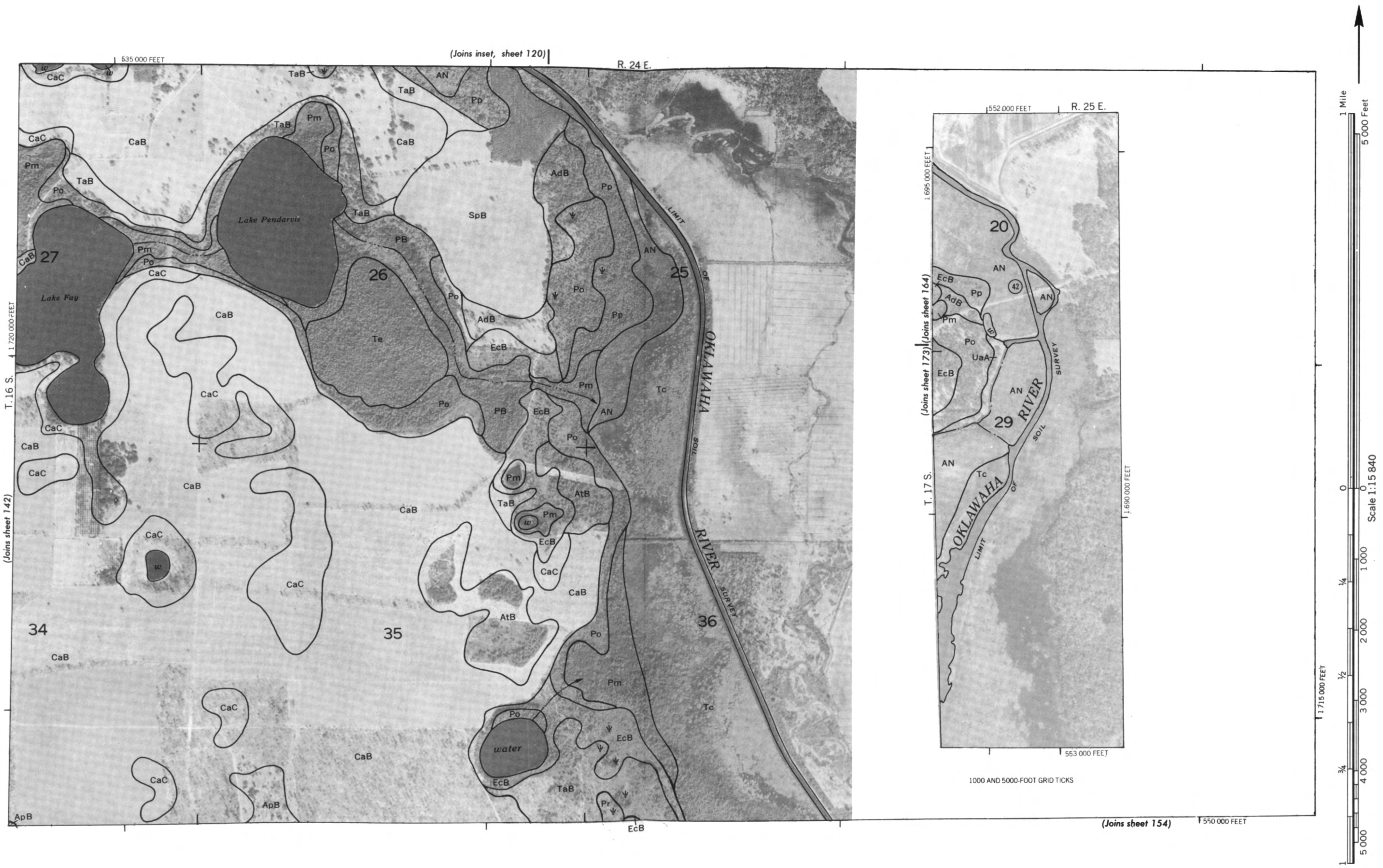
MARION COUNTY, FLORIDA — SHEET NUMBER 141

(141)

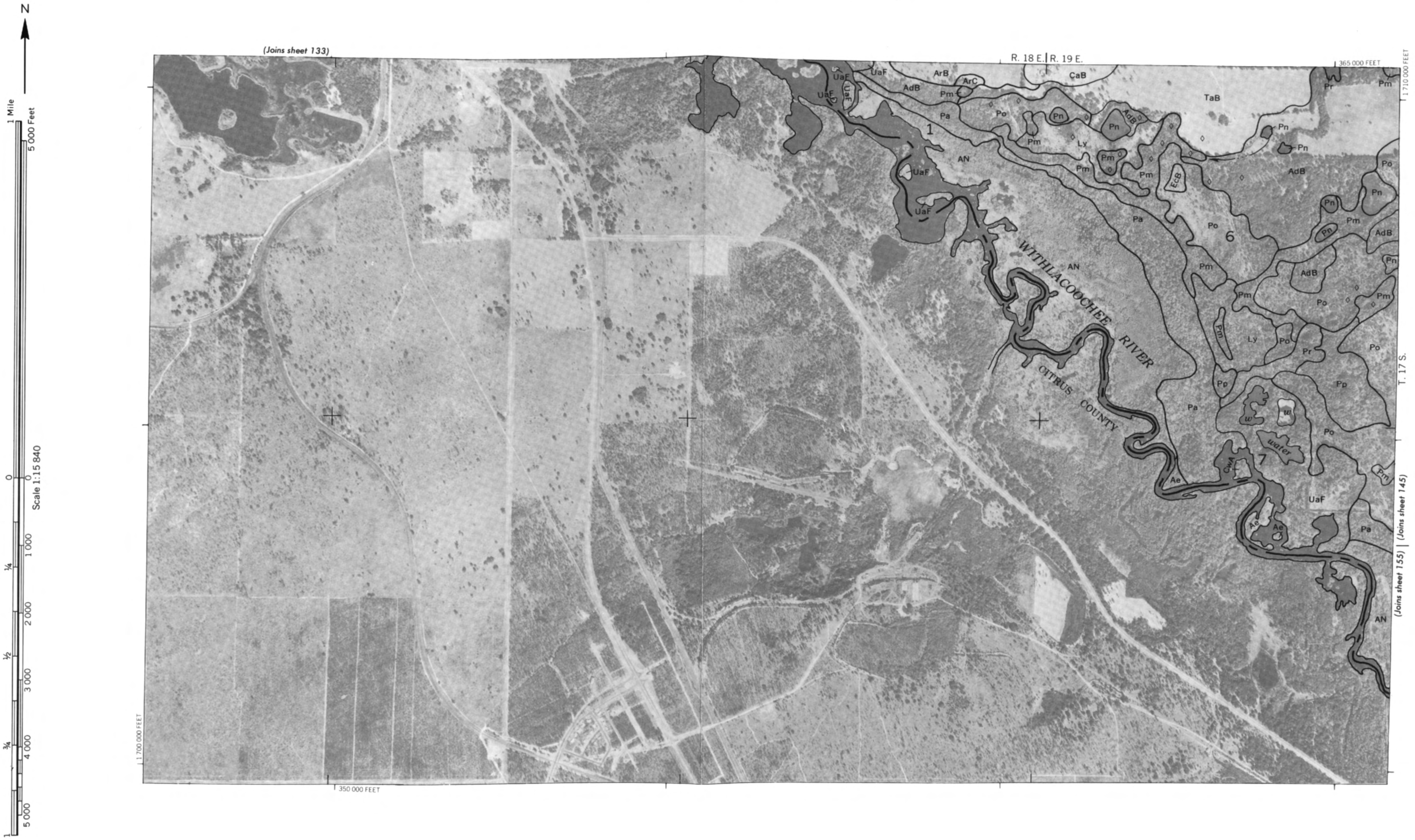

N
500 000 FEET
R. 23 E.
(Joins sheet 130)
T. 16 S.
1 720 000 FEET
(Joins sheet 140)
(Joins sheet 142)
(Joins sheet 152)
510 000 FEET
1 715 000 FEET
Candler
SEABOARD
COAST
LINE
Smith Lake
water
Bowers Lake
28
27
26
25
33
34
35
36
464
ALT 27
ALT 441
25
AtB
AtC
CaB
CaC
UaF
ApB
ApC
AdB
TaB
Pm
PB
Pr
Po
Ly
Te
SpB
HaB
ArB
w
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000
(Joins sheet 131)
R. 24 E.
530 000 FEET
(Joins sheet 141)
(Joins sheet 143)
T. 16 S.
1 720 000 FEET
1 715 000 FEET
515 000 FEET
(Joins sheet 153)
30
29
28
27
31
32
33
34
Tiger Den
Blue Sink
Lake Fay
Bowers Lake
water
w
SEABOARD
COAST
LINE
464
Ok
Te
PB
Po
Pm
Pr
Pn
Pp
CaB
CaC
AdB
ApB
ApC
TaB
SpB
EcB
JuB

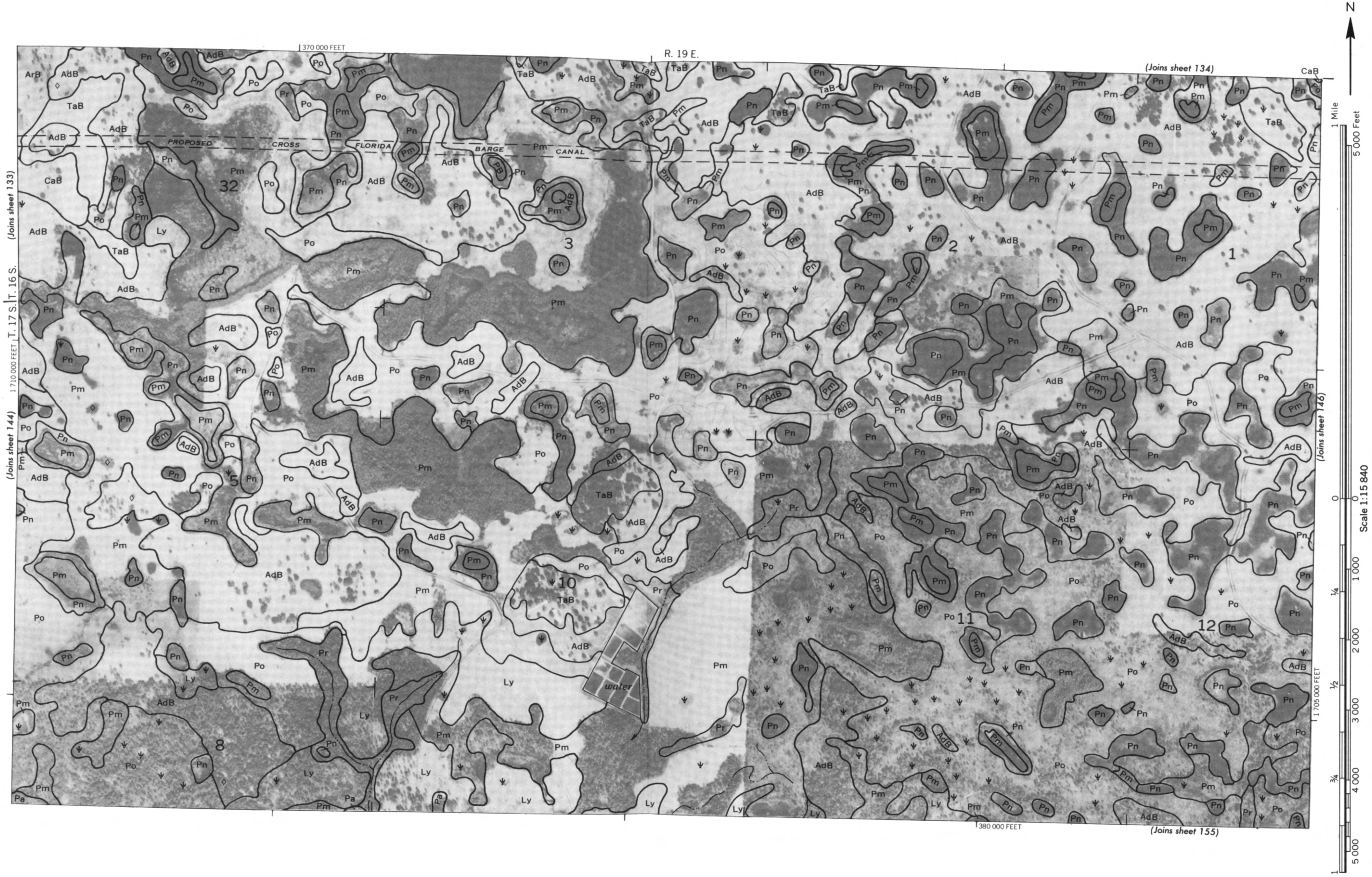
# MARION COUNTY, FLORIDA — SHEET NUMBER 143

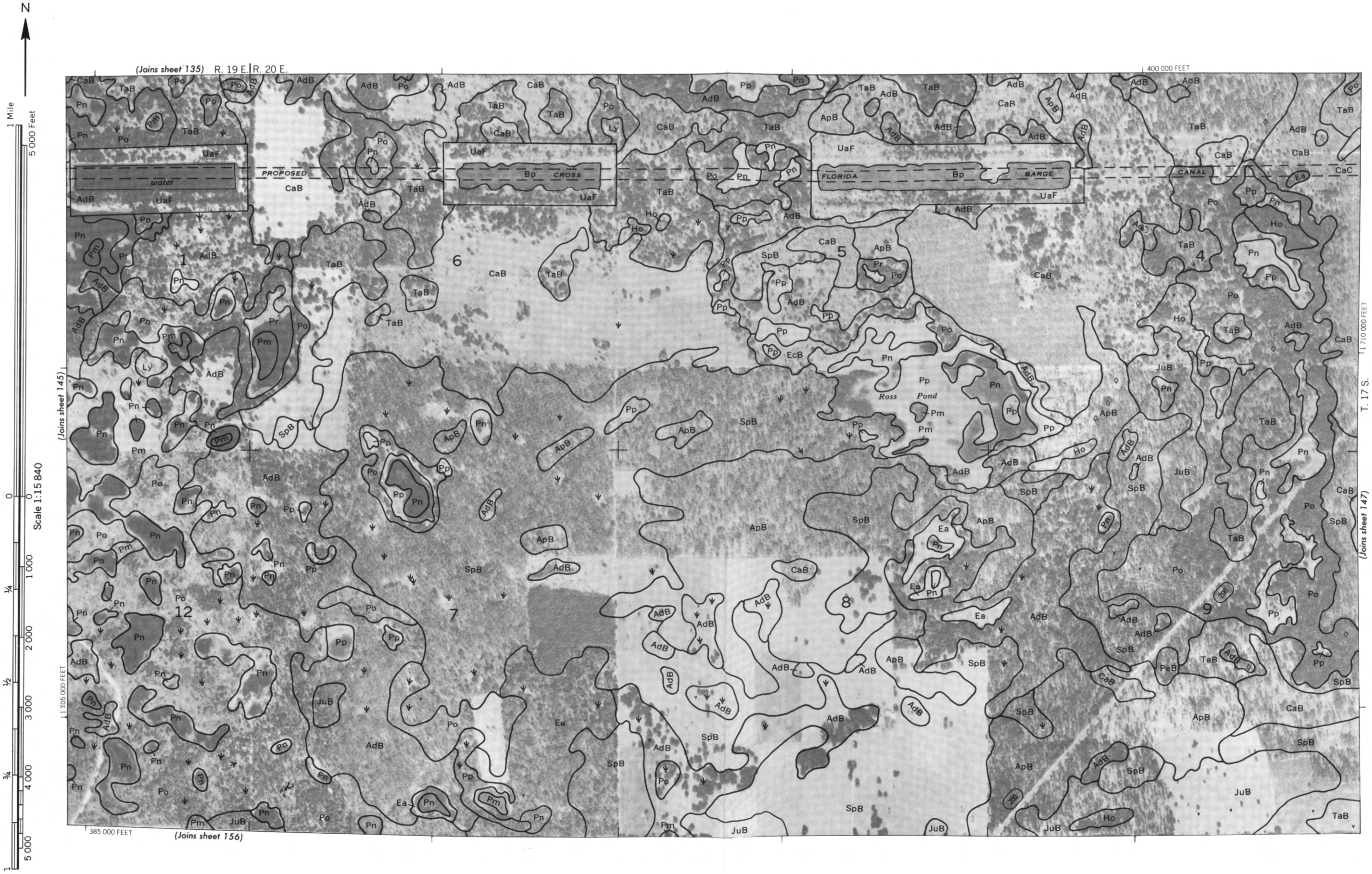

N
(Joins inset, sheet 120)
535 000 FEET
R. 24 E.
R. 25 E.
552 000 FEET
1 695 000 FEET
1 720 000 FEET
T. 16 S.
T. 17 S.
(Joins sheet 142)
(Joins sheet 164)
(Joins sheet 173)
(Joins sheet 154)
550 000 FEET
553 000 FEET
1 690 000 FEET
1 715 000 FEET
1000 AND 5000-FOOT GRID TICKS
Lake Pendarvis
Lake Fay
water
w
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
25
26
27
34
35
36
20
29
42
CaB
CaC
TaB
Pm
Po
Pp
Pr
PB
AN
AdB
SpB
Te
Tc
EcB
AtB
ApB
UaA
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1000
2000
3000
4000
5000

# MARION COUNTY, FLORIDA — SHEET NUMBER 144

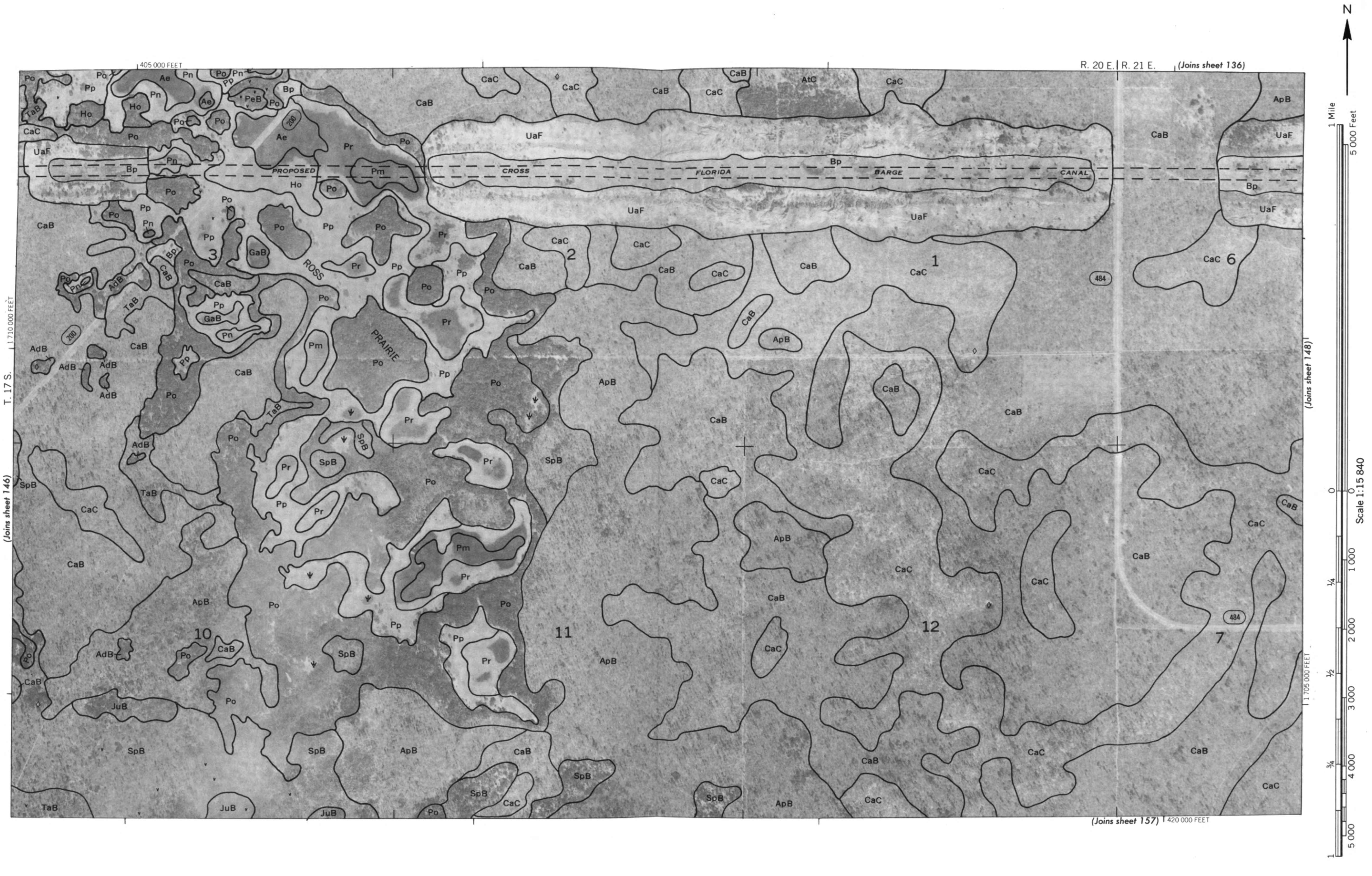

N
1 Mile
5 000 Feet
Scale 1:15 840
0
0
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 133)
R. 18 E.
R. 19 E.
365 000 FEET
1 710 000 FEET
T. 17 S.
(Joins sheet 145)
(Joins sheet 155)
1 700 000 FEET
350 000 FEET
UaF
UaF
UaF
UaF
UaF
UaF
UaF
ArB
ArC
CaB
TaB
AdB
Pm
Pa
Po
Pn
Pn
AdB
1
Pm
Ly
Pm
Pm
Pm
EcB
Pn
Pn
AN
Pa
Po
6
AdB
Po
Pn
Pn
Pm
AdB
Pn
Pr
Pm
AN
Pm
Pm
AdB
Po
Pm
Pm
Ly
Po
Pr
Po
Pp
Pp
WITHLACOOCHEE RIVER
CITRUS COUNTY
Pa
w
w
water
Po
7
CwA
Ae
Ae
Ae
UaF
Pm
Pa
AN

# MARION COUNTY, FLORIDA — SHEET NUMBER 145

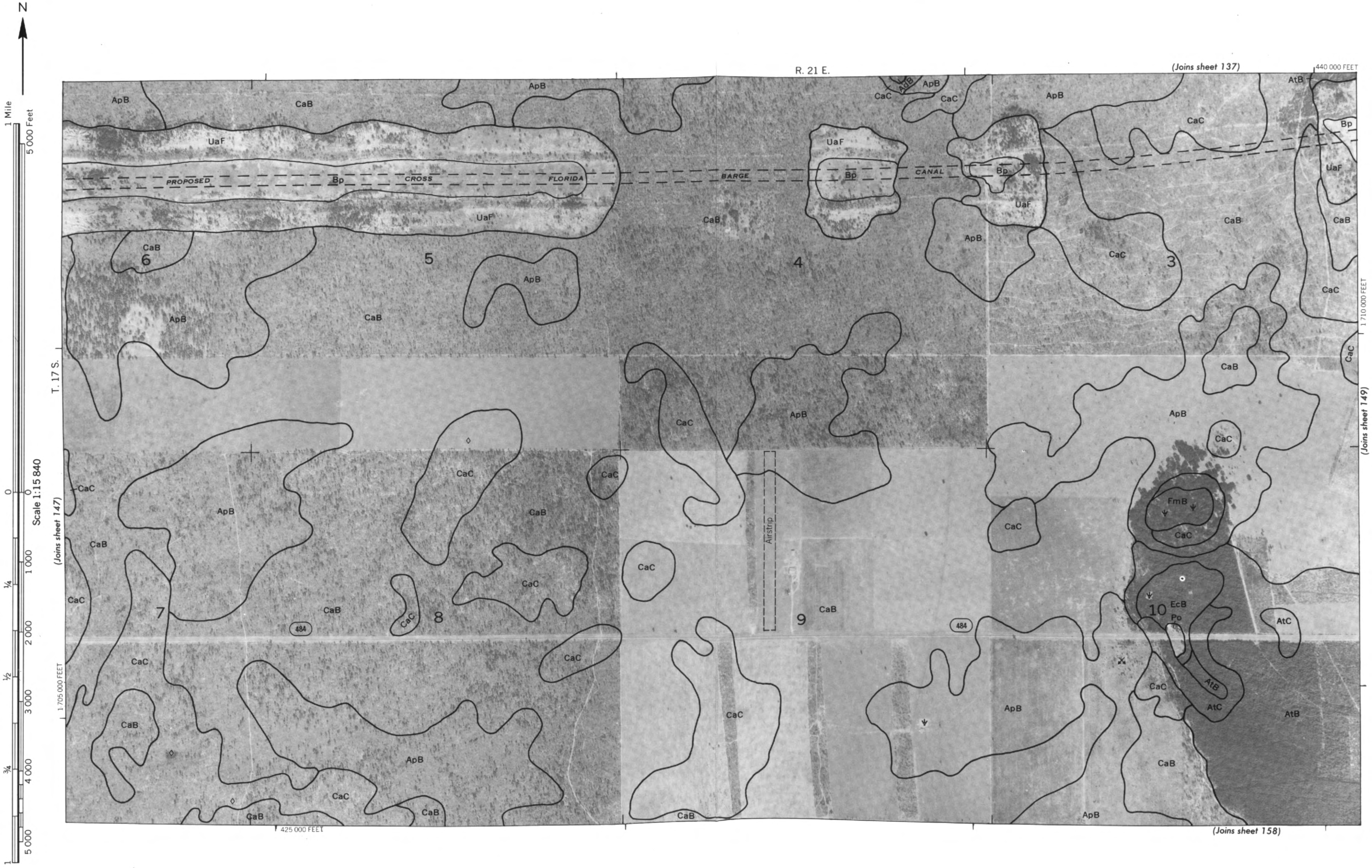

N
370 000 FEET
R. 19 E.
(Joins sheet 134)
(Joins sheet 133)
(Joins sheet 144)
(Joins sheet 146)
(Joins sheet 155)
T. 16 S.
T. 17 S.
1 710 000 FEET
1 705 000 FEET
380 000 FEET
PROPOSED CROSS FLORIDA BARGE CANAL
water
32
1
2
3
5
8
10
11
12
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000

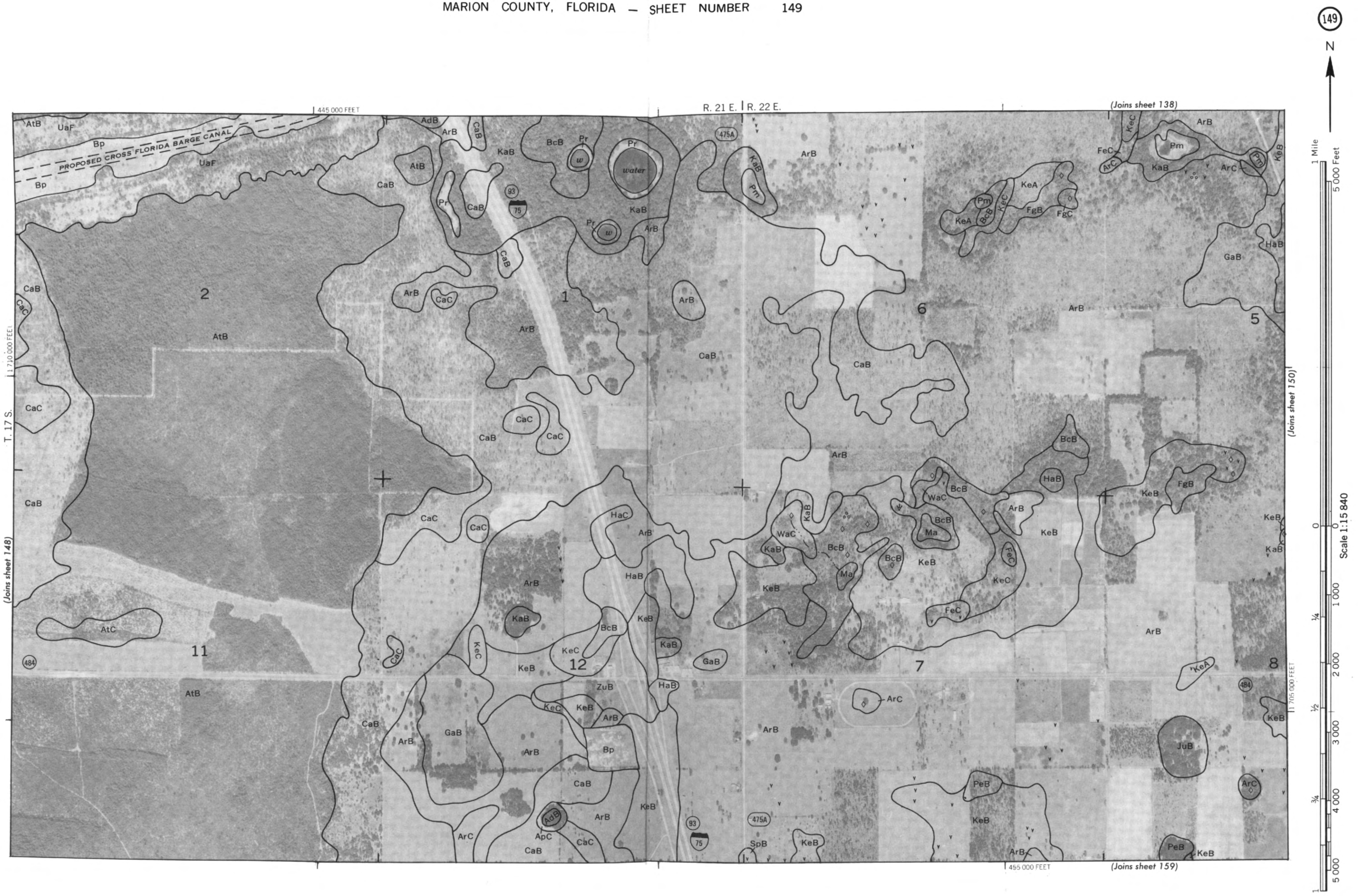

N
1 Mile
5 000 Feet
0
0
1 000
¼
2 000
½
3 000
¾
4 000
1
5 000
Scale 1:15 840
(Joins sheet 135)
R. 19 E.
R. 20 E.
400 000 FEET
1 710 000 FEET
T. 17 S.
(Joins sheet 145)
(Joins sheet 147)
1 705 000 FEET
385 000 FEET
(Joins sheet 156)
PROPOSED
CROSS
FLORIDA
BARGE
CANAL
water
Ross
Pond
1
4
5
6
7
8
9
12
200
CaB
TaB
Pn
Po
Pm
AdB
UaF
Bp
Ly
Pr
Pp
ApB
SpB
Ho
Ea
EcB
JuB
JuH
CaC
PeB

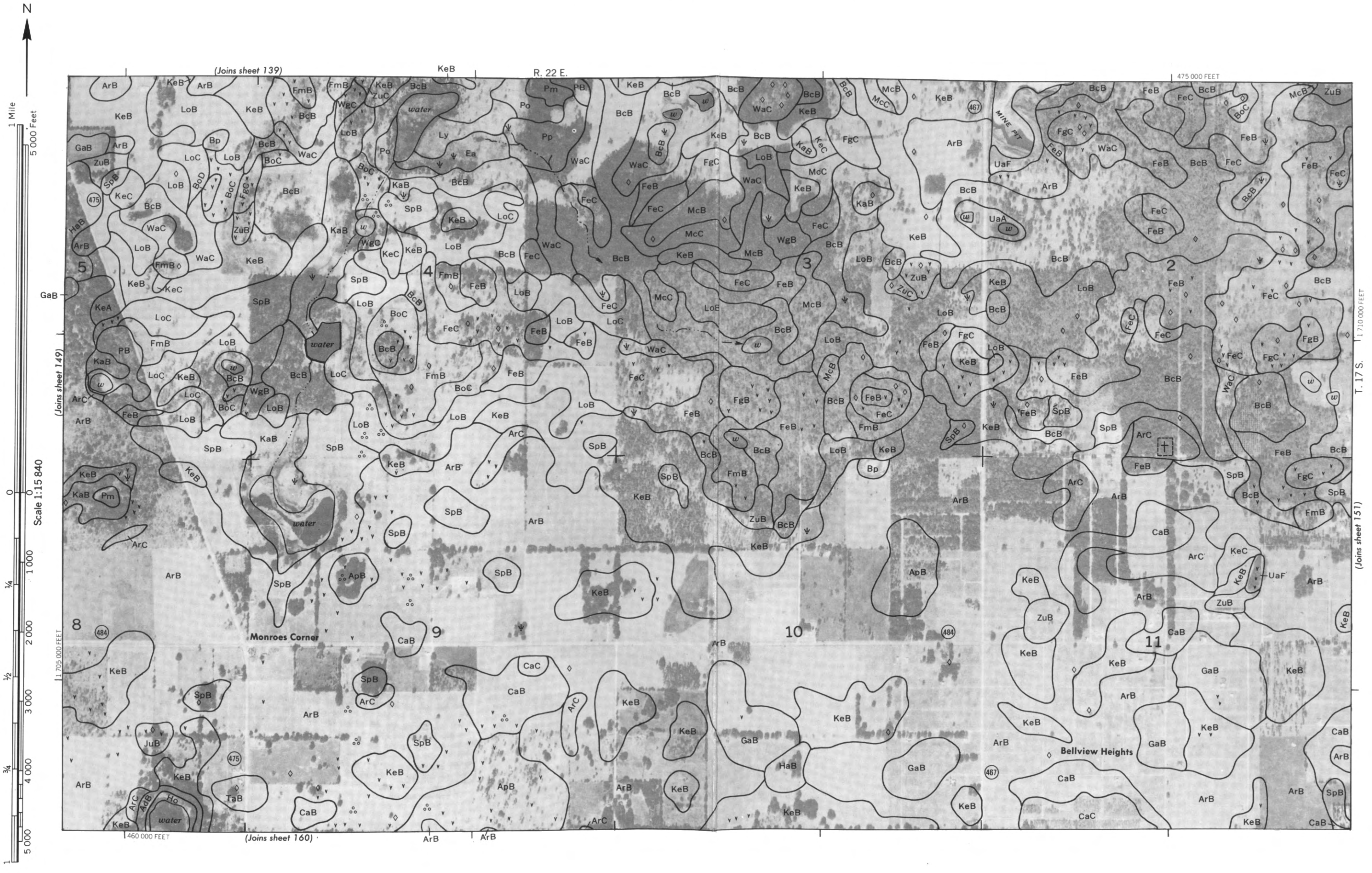
MARION COUNTY, FLORIDA — SHEET NUMBER 147


N
405 000 FEET
R. 20 E. | R. 21 E.
(Joins sheet 136)
(Joins sheet 148)
(Joins sheet 157)
(Joins sheet 146)
420 000 FEET
1 710 000 FEET
1 705 000 FEET
T. 17 S.
PROPOSED CROSS FLORIDA BARGE CANAL
ROSS PRAIRIE
200
484
1
2
3
6
7
10
11
12
UaF
Bp
CaB
CaC
ApB
AtC
AdB
TaB
SpB
JuB
GaB
Po
Pp
Pr
Pm
Pn
Ho
Ae
PeB
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

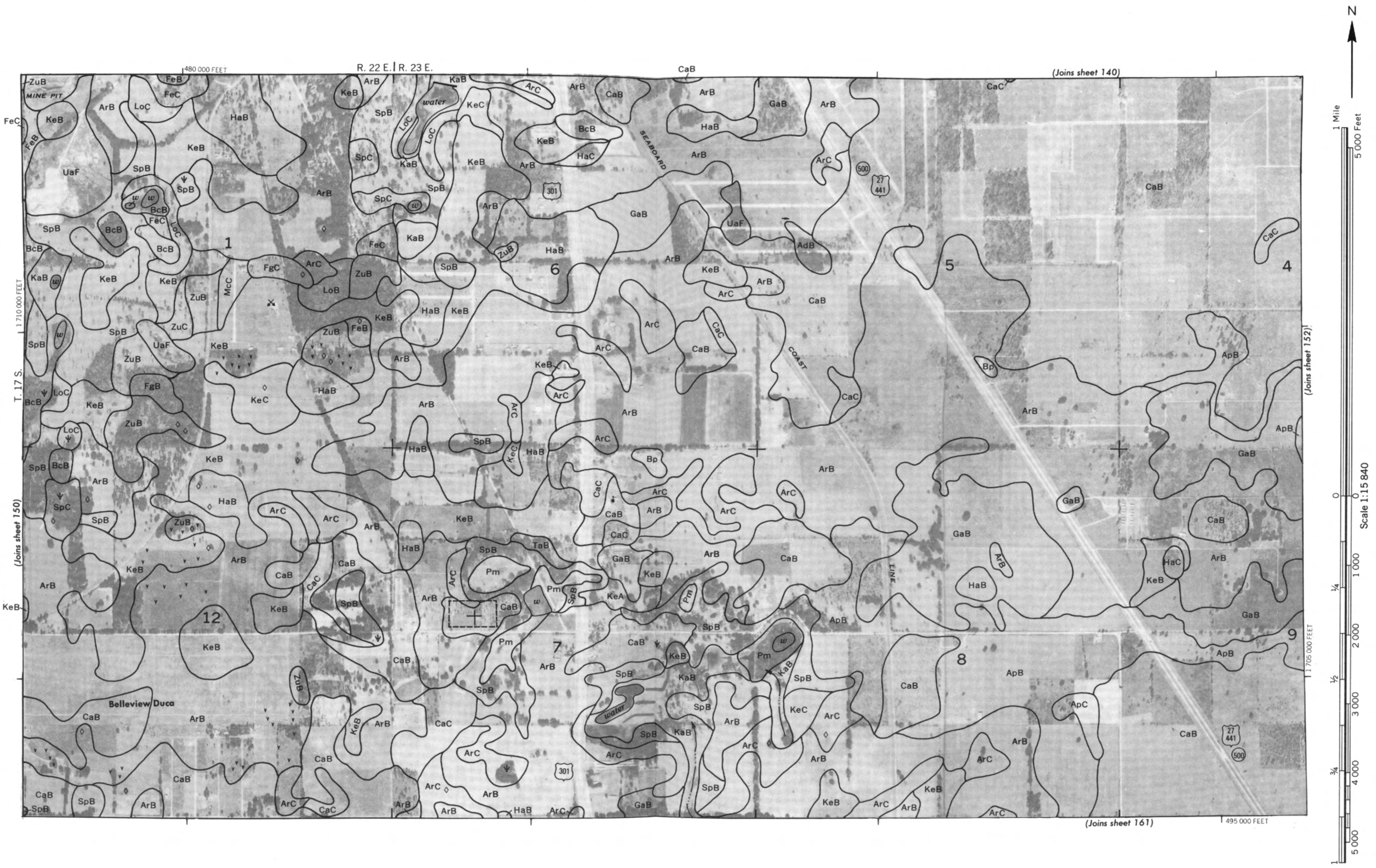
# MARION COUNTY, FLORIDA — SHEET NUMBER 148


N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
R. 21 E.
(Joins sheet 137)
440 000 FEET
T. 17 S.
(Joins sheet 147)
(Joins sheet 149)
1 710 000 FEET
1 705 000 FEET
425 000 FEET
(Joins sheet 158)
PROPOSED
CROSS
FLORIDA
BARGE
CANAL
Airstrip
484
484
3
4
5
6
7
8
9
10
ApB
CaB
UaF
Bp
AdB
CaC
AtB
FmB
EcB
Po
AtC

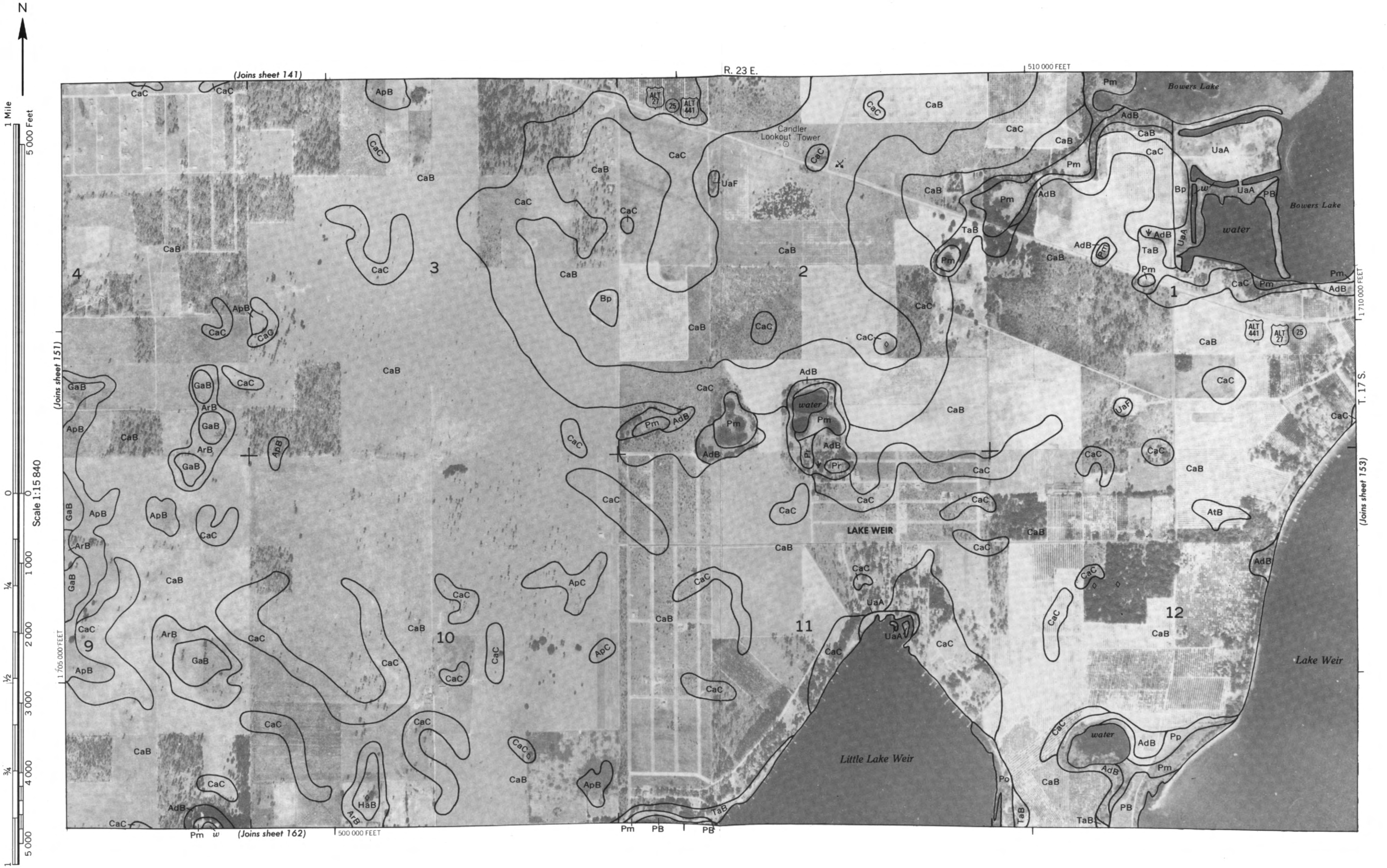

149
N
(Joins sheet 138)
R. 21 E. | R. 22 E.
445 000 FEET
PROPOSED CROSS FLORIDA BARGE CANAL
T. 17 S.
1 710 000 FEET
(Joins sheet 148)
(Joins sheet 150)
1 705 000 FEET
455 000 FEET
(Joins sheet 159)
93
75
475A
484
1
2
5
6
7
8
11
12
water
w
AtB
UaF
Bp
AdB
ArB
CaB
KaB
BcB
Pr
AtB
CaC
Pm
KeA
KeC
FgB
FgC
FeC
ArC
HaB
GaB
HaC
BcB
WaC
Ma
KeB
FeC
AtC
ZuB
JuB
PeB
SpB
ApC
AdB
Scale 1:15 840
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
(Joins sheet 139)
R. 22 E.
475 000 FEET
1 710 000 FEET
T. 17 S.
(Joins sheet 149)
(Joins sheet 151)
(Joins sheet 160)
1 705 000 FEET
460 000 FEET
Monroes Corner
Bellview Heights
MINE PIT
water
475
484
467
2
3
4
5
8
9
10
11
ArB
KeB
LoB
BcB
FeB
SpB
WaC
FeC
McB
CaB
GaB
ArC
LoC
FmB
ApB

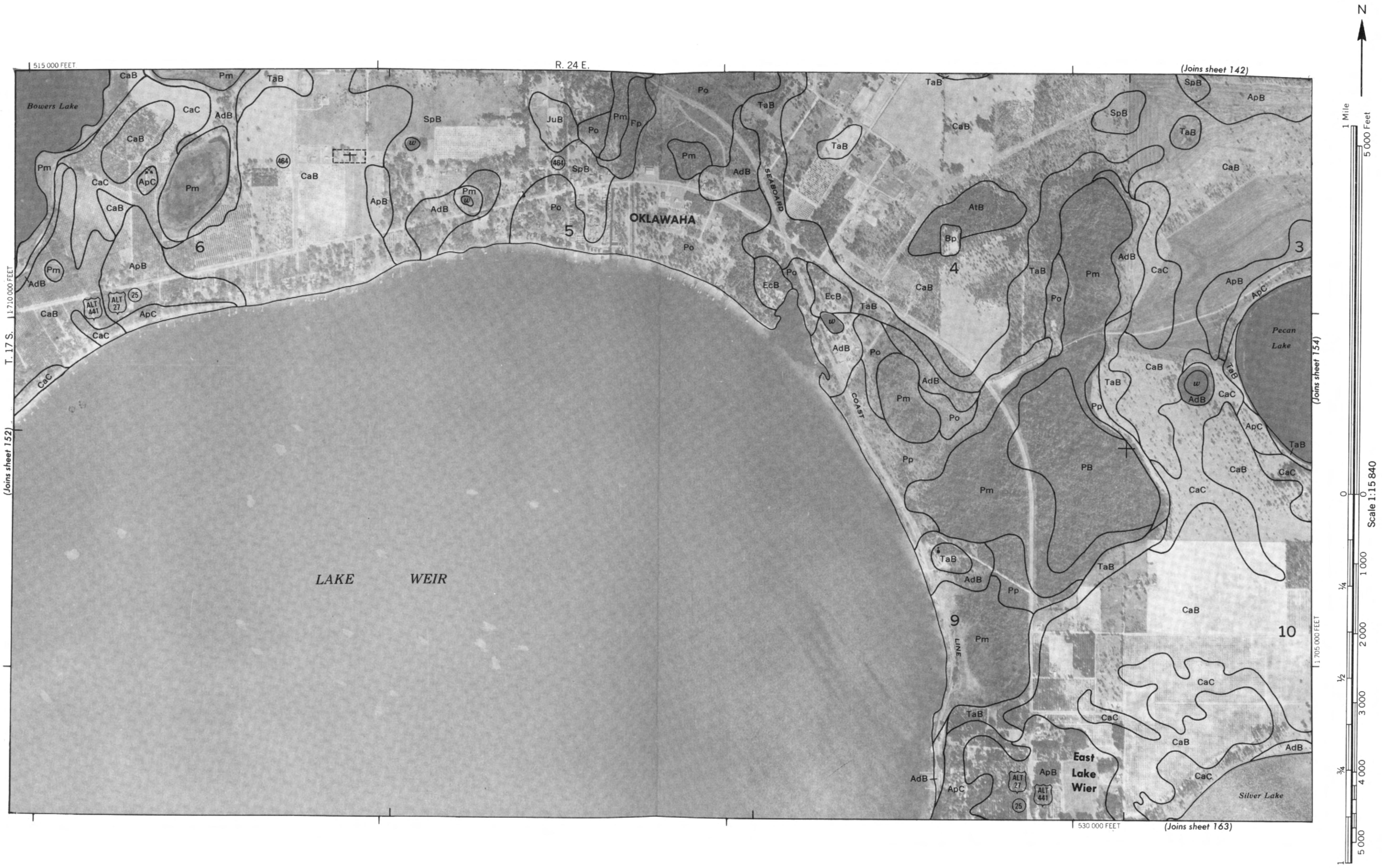
# MARION COUNTY, FLORIDA — SHEET NUMBER 151

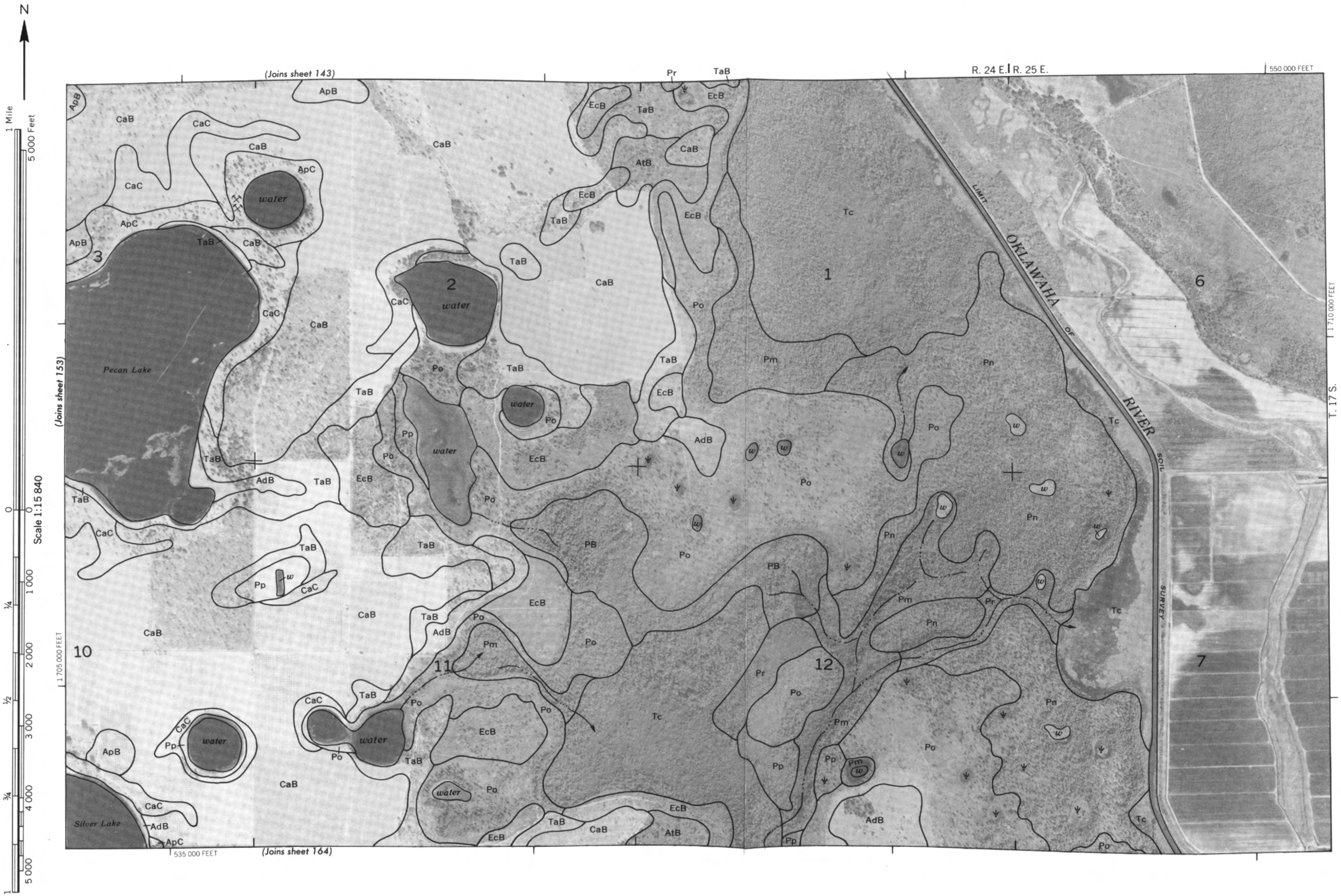

N
480 000 FEET
R. 22 E. | R. 23 E.
(Joins sheet 140)
(Joins sheet 152)
(Joins sheet 161)
(Joins sheet 150)
1 710 000 FEET
1 705 000 FEET
495 000 FEET
T. 17 S.
MINE PIT
SEABOARD
COAST
LINE
Belleview Duca
water
301
500
27
441
1
4
5
6
7
8
9
12
ZuB
FeB
FeC
KeB
ArB
LoC
HaB
UaF
SpB
BcB
BcB
SpC
KaB
KeC
ArC
CaB
CaC
GaB
HaC
AdB
FgC
LoB
McC
ZuC
FgB
HaB
ApB
ApC
Bp
KeA
Pm
TaB
w
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1 000
2 000
3 000
4 000
5 000

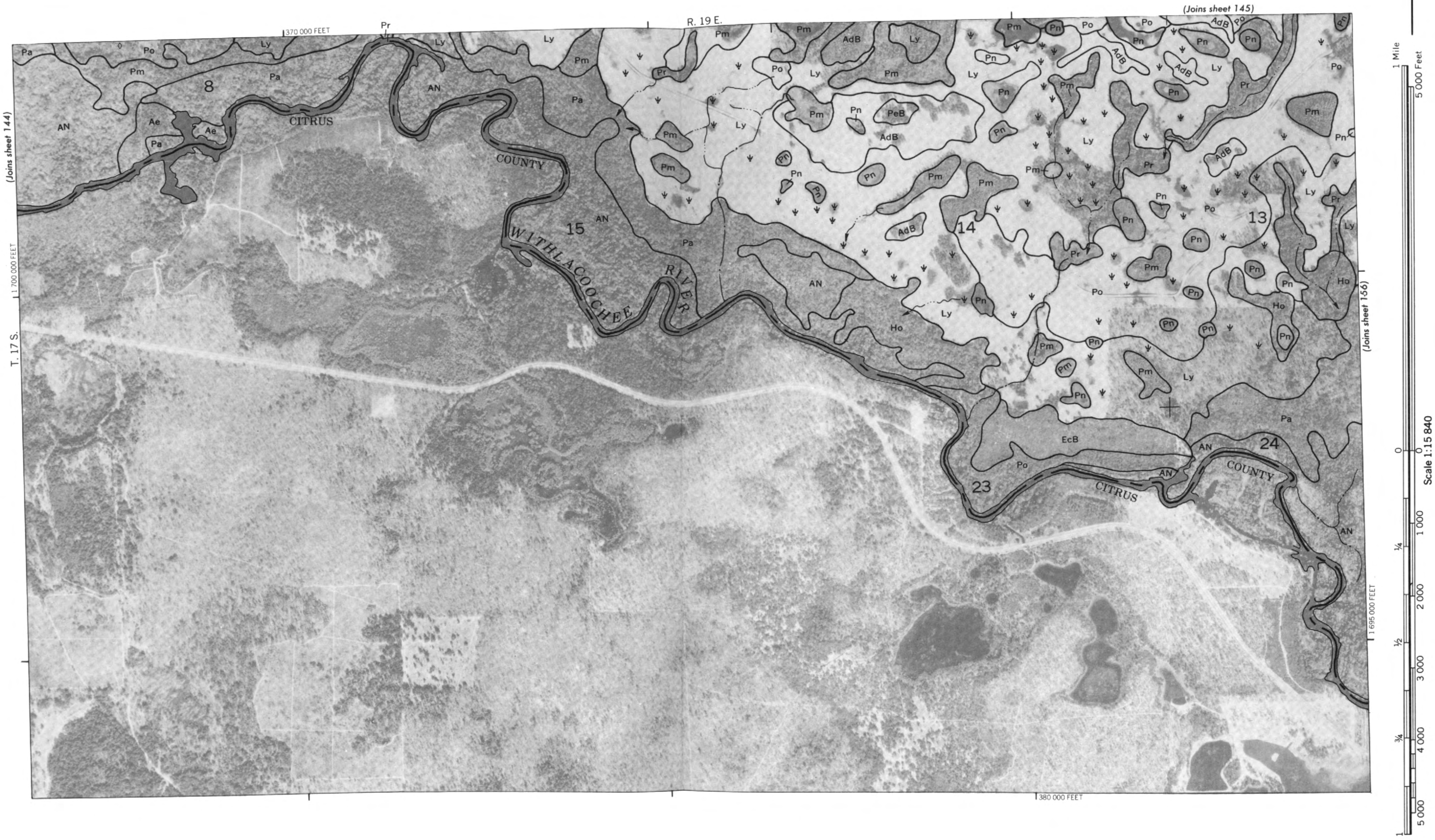
# MARION COUNTY, FLORIDA — SHEET NUMBER 152

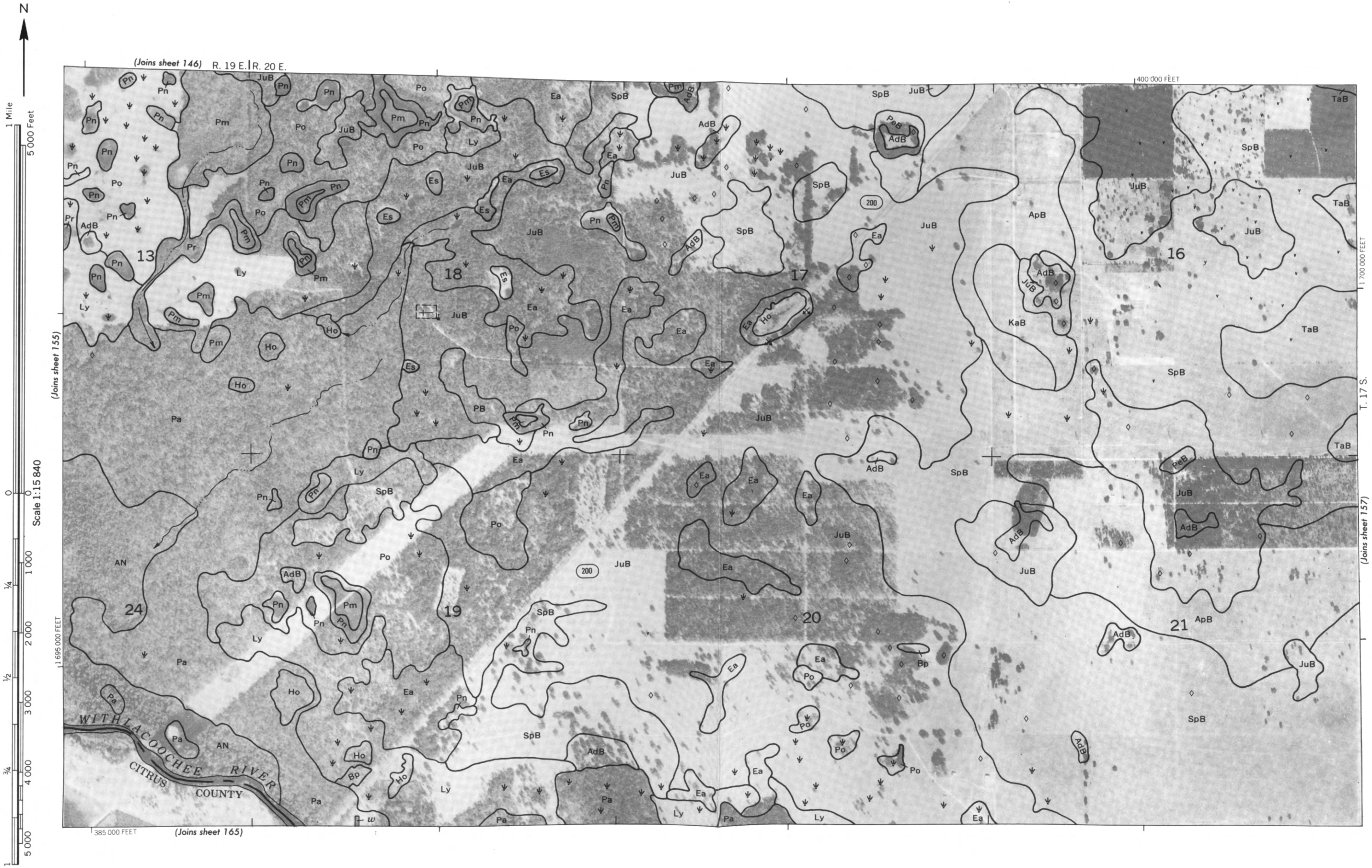

N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
(Joins sheet 141)
R. 23 E.
510 000 FEET
(Joins sheet 151)
(Joins sheet 153)
(Joins sheet 162)
500 000 FEET
1 705 000 FEET
1 710 000 FEET
T. 17 S.
ALT 27
25
ALT 441
Candler
Lookout Tower
Bowers Lake
water
LAKE WEIR
Little Lake Weir
Lake Weir
1
2
3
4
9
10
11
12
CaB
CaC
ApB
ApC
ArB
AtB
AdB
GaB
HaB
Bp
Pm
Pp
PB
Po
Pr
TaB
UaA
UaF
w

MARION COUNTY, FLORIDA — SHEET NUMBER 153

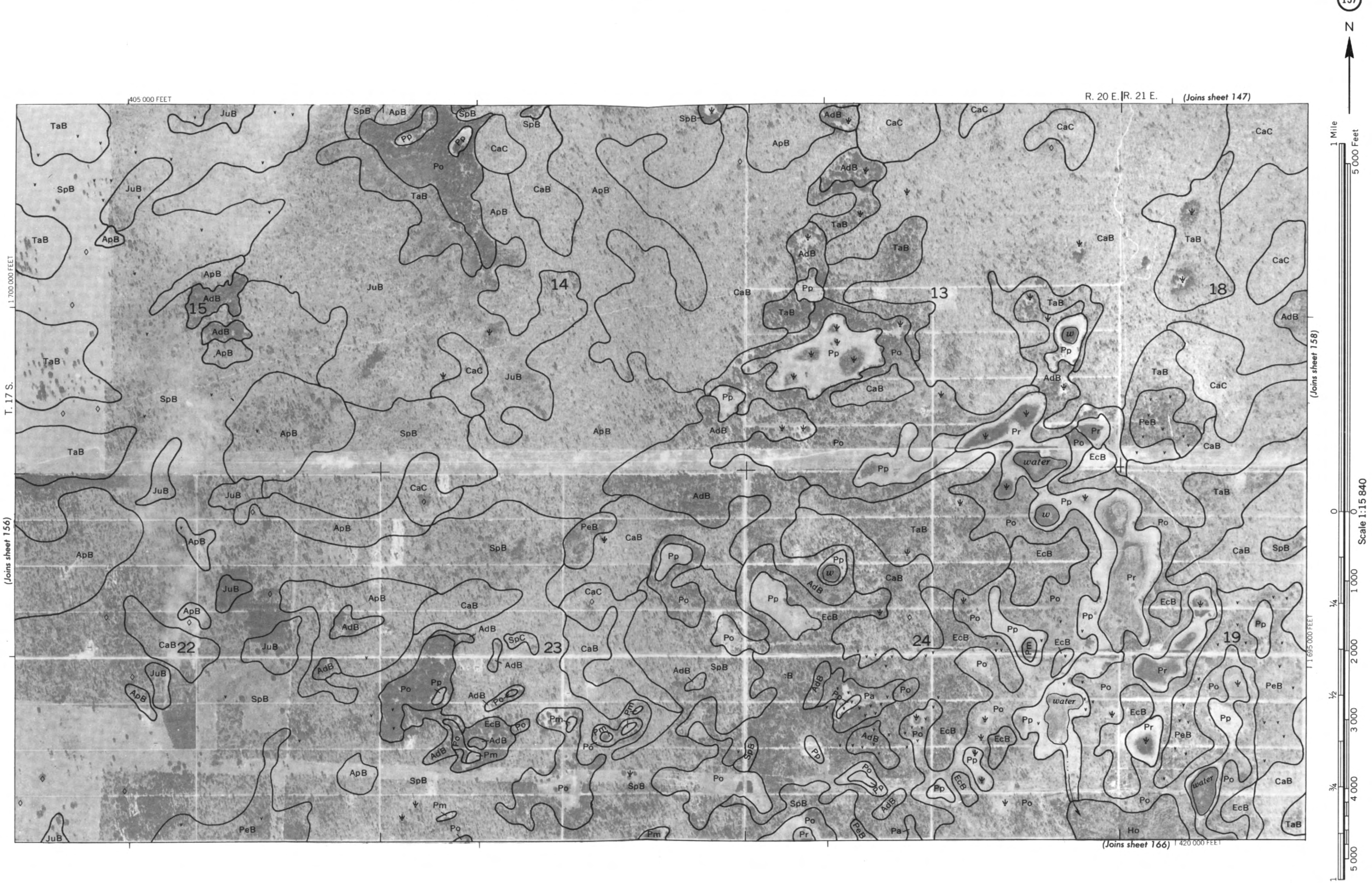

N
515 000 FEET
R. 24 E.
(Joins sheet 142)
1 710 000 FEET
T. 17 S.
(Joins sheet 152)
(Joins sheet 154)
1 705 000 FEET
530 000 FEET
(Joins sheet 163)
Bowers Lake
CaB
Pm
TaB
CaC
AdB
CaB
ApC
CaC
CaB
Pm
6
ApB
Pm
AdB
CaB
ALT 441
ALT 27
25
ApC
CaC
CaC
464
CaB
SpB
w
ApB
Pm
w
AdB
JuB
464
SpB
Po
Pm
Fp
Po
5
OKLAWAHA
Po
Po
Po
TaB
Pm
AdB
SEABOARD
TaB
CaB
TaB
AtB
Bp
4
CaB
EcB
Po
EcB
TaB
w
AdB
Po
COAST
AdB
Pm
Po
Pp
Pm
TaB
Po
Pm
PB
AdB
CaC
SpB
TaB
ApB
CaB
3
ApB
ApC
Pecan Lake
CaB
TaB
w
AdB
CaC
TaB
Pp
ApC
TaB
CaB
CaC
CaC
TaB
AdB
Pp
TaB
9
LINE
Pm
CaB
10
CaC
CaC
TaB
CaB
AdB
CaC
AdB
ApC
ALT 27
25
ApB
ALT 441
East Lake Wier
Silver Lake
LAKE WEIR
1 Mile
5 000 Feet
0
1/4
1/2
3/4
1
0
1000
2000
3000
4000
5000
Scale 1:15 840


N
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1 000
2 000
3 000
4 000
5 000
(Joins sheet 143)
(Joins sheet 153)
(Joins sheet 164)
R. 24 E. | R. 25 E.
550 000 FEET
1 710 000 FEET
1 705 000 FEET
535 000 FEET
T. 17 S.
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
Pecan Lake
Silver Lake
water
w
1
2
3
6
7
10
11
12
ApB
ApC
AdB
AtB
CaB
CaC
EcB
TaB
Po
Pp
Pm
Pn
Pr
PB
Tc


N
(Joins sheet 145)
(Joins sheet 144)
(Joins sheet 156)
370 000 FEET
380 000 FEET
1 700 000 FEET
1 695 000 FEET
R. 19 E.
T. 17 S.
WITHLACOOCHEE RIVER
CITRUS COUNTY
CITRUS COUNTY
8
15
14
13
23
24
AN
Ae
Pa
Po
Pm
Ly
Pr
Pn
AdB
PeB
Ho
EcB
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000

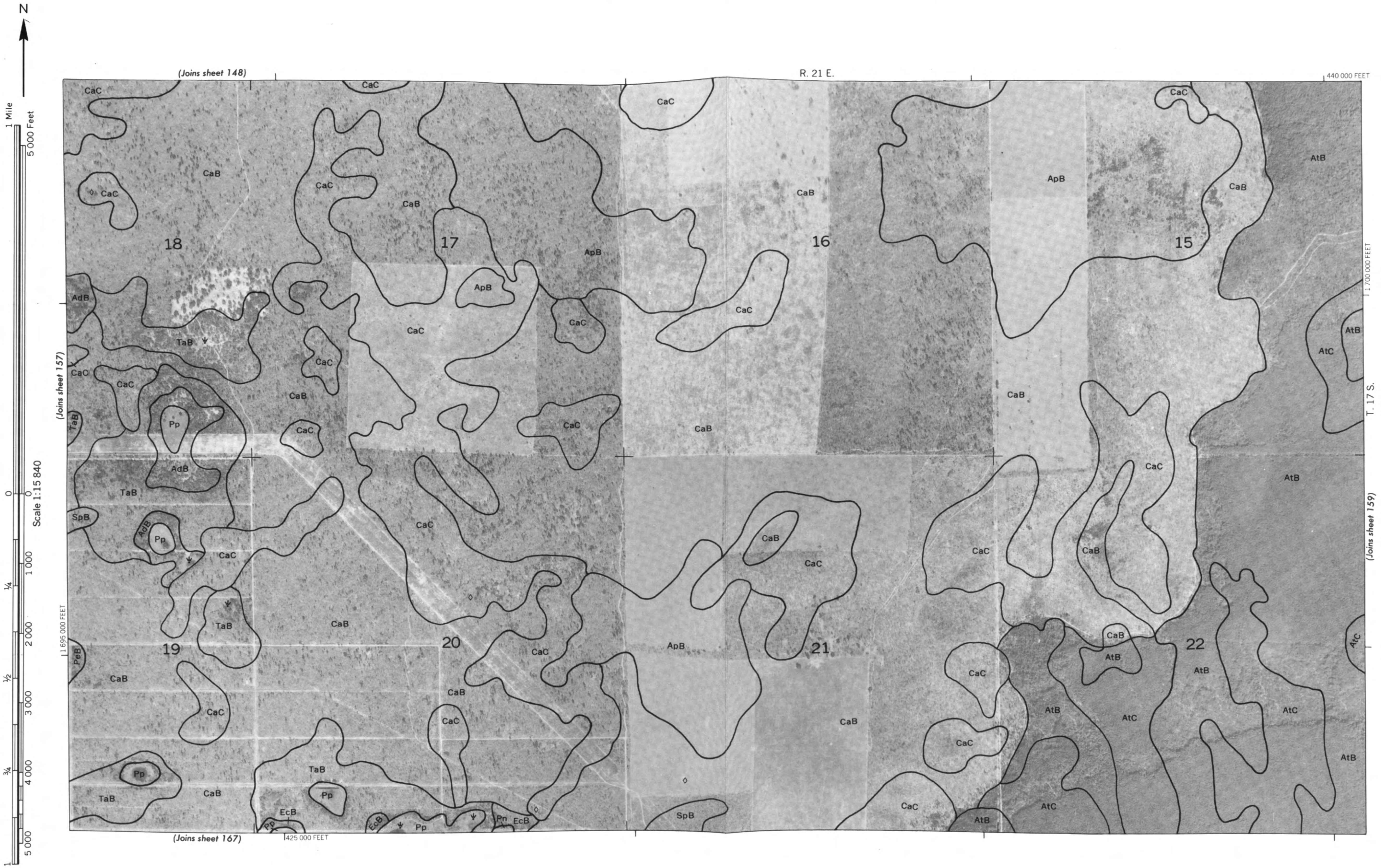

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 146)
R. 19 E.
R. 20 E.
400 000 FEET
(Joins sheet 155)
(Joins sheet 157)
(Joins sheet 165)
385 000 FEET
1 695 000 FEET
1 700 000 FEET
T. 17 S.
WITHLACOOCHEE RIVER
CITRUS COUNTY
13
16
17
18
19
20
21
24
200
AdB
AN
ApB
Bp
Ea
Es
Ho
JuB
KaB
Ly
Pa
PB
PeB
Pm
Pn
Po
Pr
SpB
TaB
w

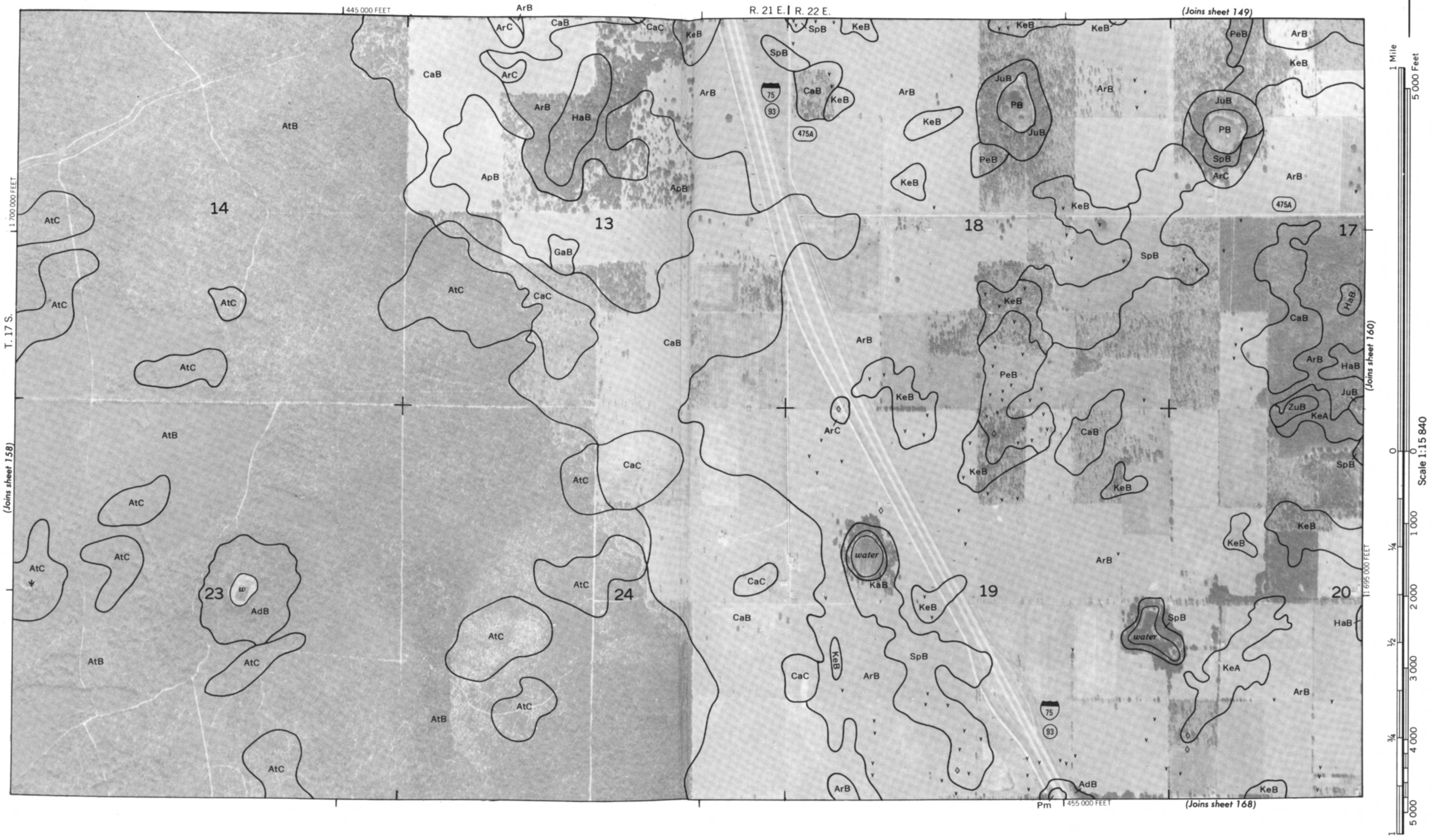
MARION COUNTY, FLORIDA — SHEET NUMBER 157



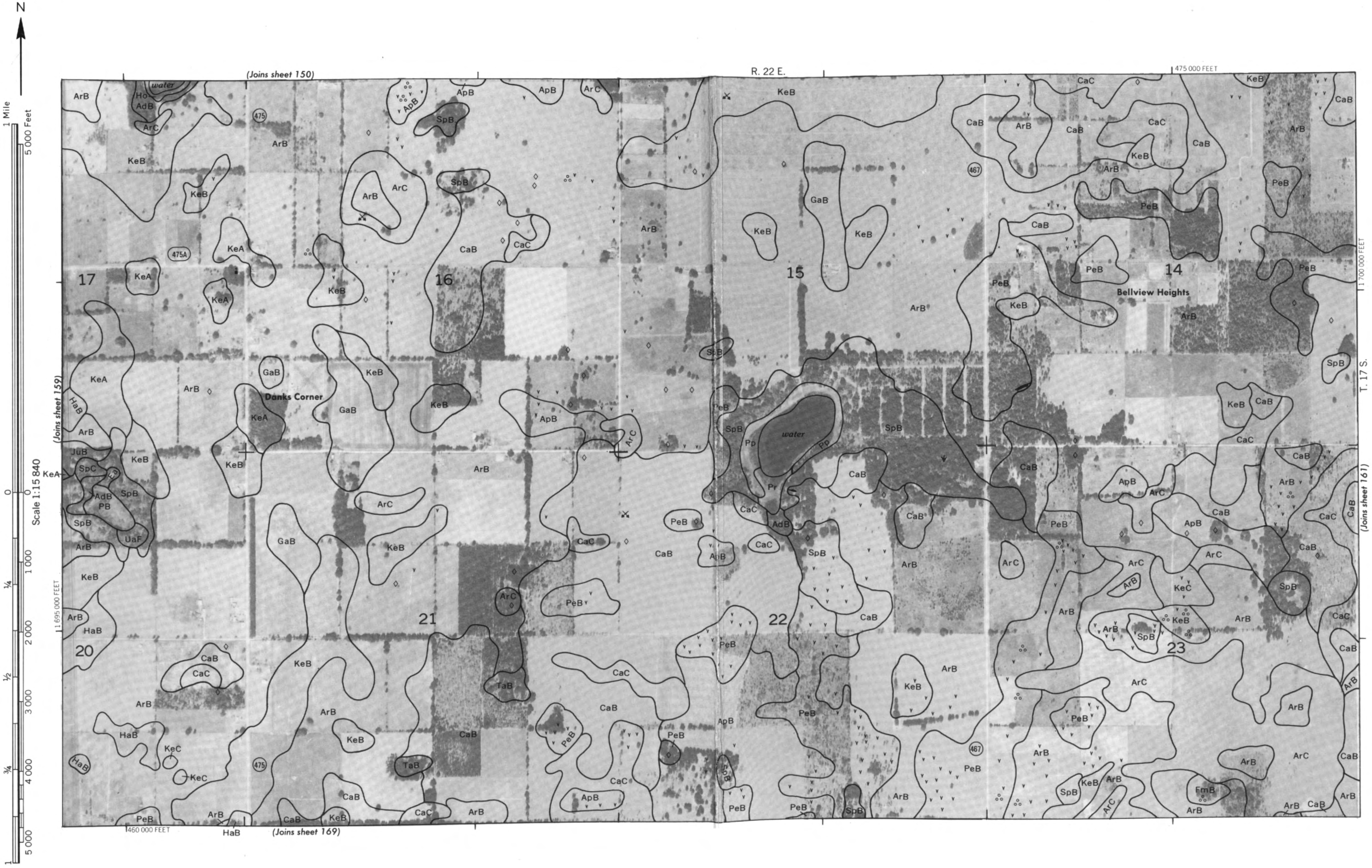
157
N
405 000 FEET
R. 20 E.
R. 21 E.
(Joins sheet 147)
(Joins sheet 156)
(Joins sheet 158)
(Joins sheet 166)
1 700 000 FEET
1 695 000 FEET
420 000 FEET
T. 17 S.
13
14
15
18
19
22
23
24
TaB
JuB
SpB
ApB
Po
Pp
CaC
CaB
AdB
PeB
Pr
EcB
SpC
Pm
Pa
Ho
water
w
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

# MARION COUNTY, FLORIDA — SHEET NUMBER 158

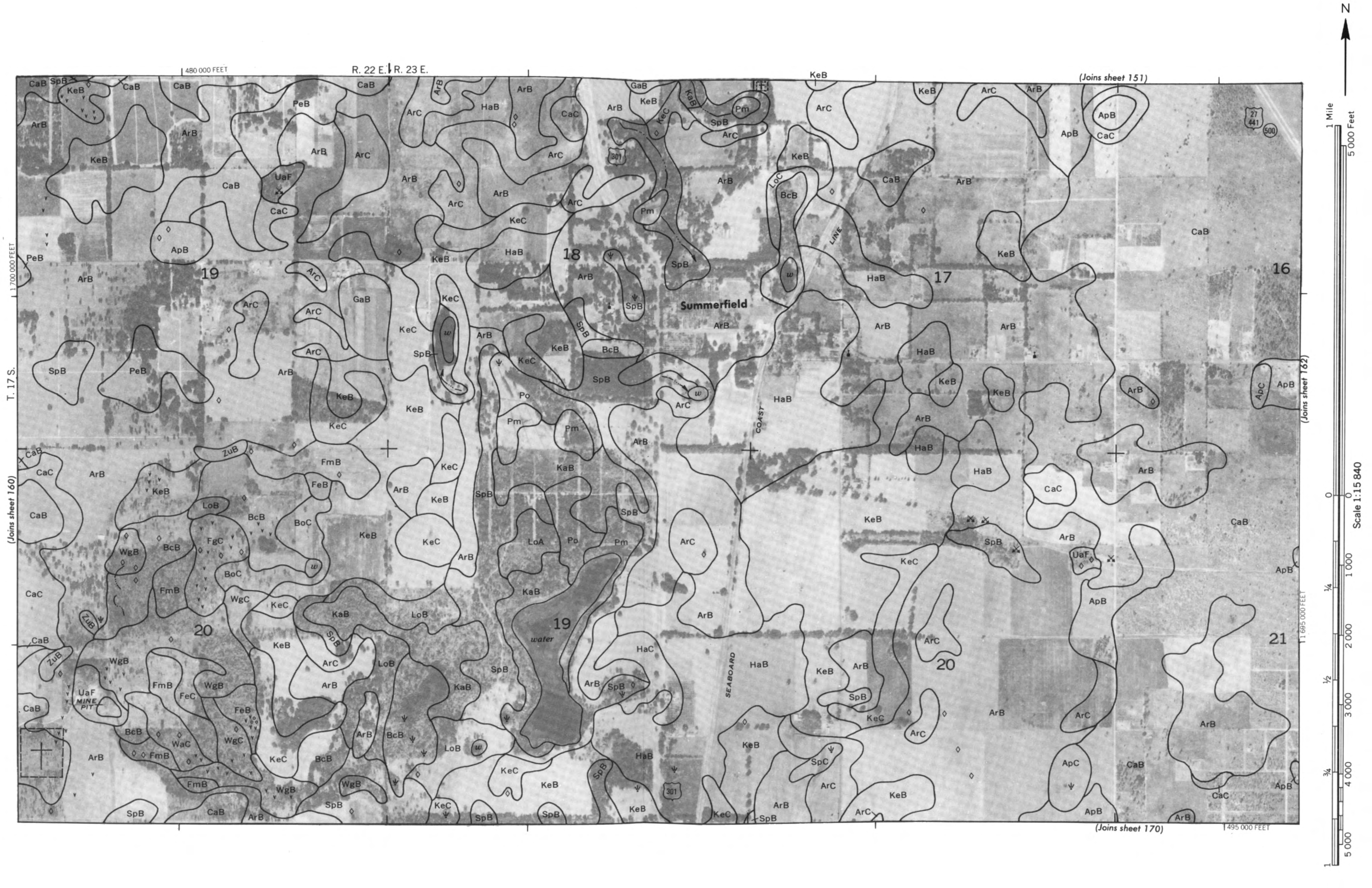

N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
¼
2 000
½
3 000
¾
4 000
5 000
1
(Joins sheet 148)
R. 21 E.
440 000 FEET
1 700 000 FEET
T. 17 S.
(Joins sheet 159)
(Joins sheet 157)
1 695 000 FEET
(Joins sheet 167)
425 000 FEET
18
17
16
15
19
20
21
22
CaC
CaB
ApB
AdB
TaB
Pp
SpB
PeB
EcB
AtB
AtC


159
N
445 000 FEET
R. 21 E.
R. 22 E.
(Joins sheet 149)
(Joins sheet 158)
(Joins sheet 160)
(Joins sheet 168)
1 700 000 FEET
1 695 000 FEET
455 000 FEET
T. 17 S.
14
13
18
17
23
24
19
20
75
93
475A
AtB
AtC
AdB
ArB
ArC
ApB
CaB
CaC
HaB
GaB
KeB
KeA
KaB
SpB
JuB
PB
PeB
ZuB
Pm
water
w
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

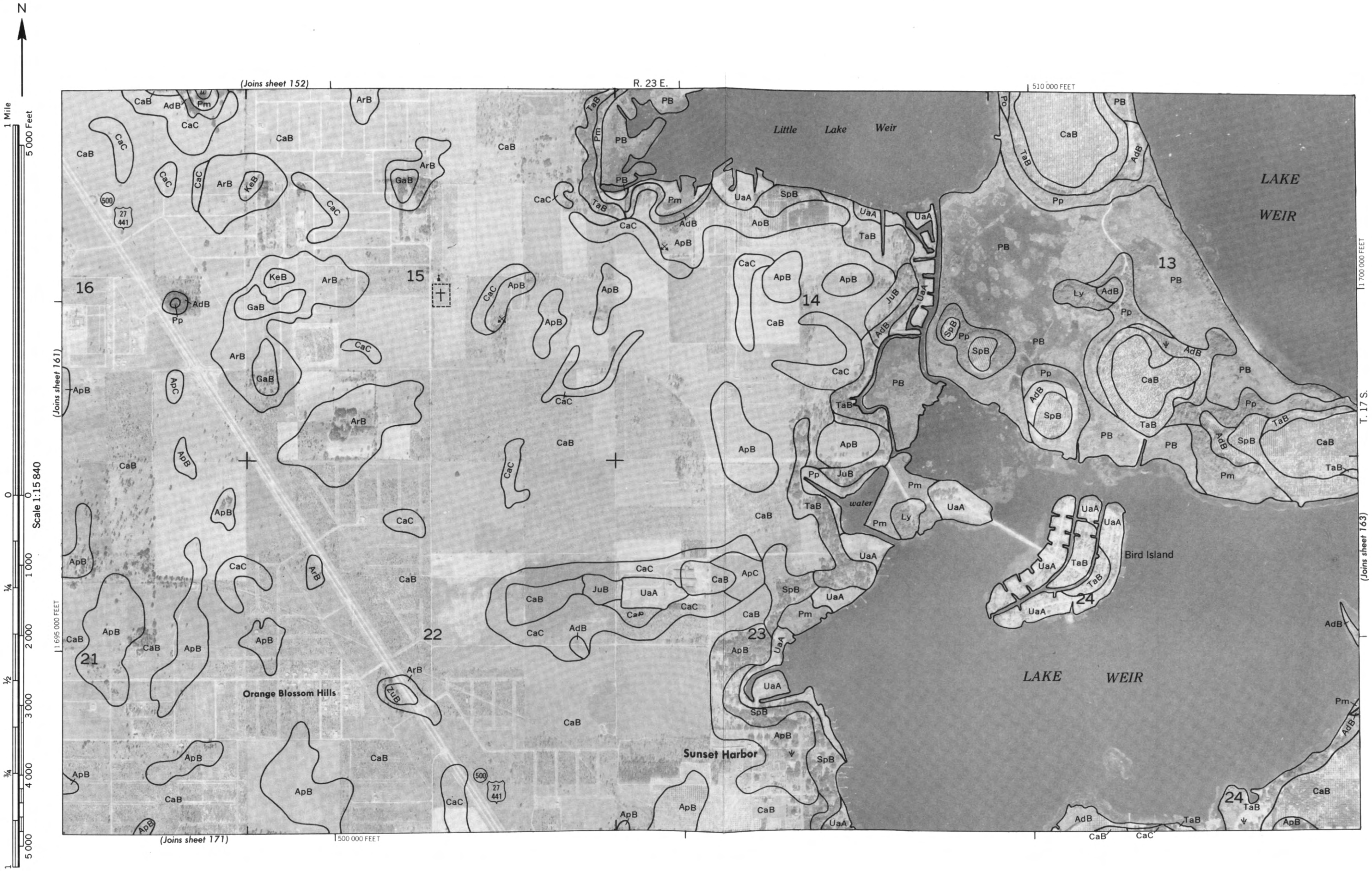
MARION COUNTY, FLORIDA — SHEET NUMBER 160


N
(Joins sheet 150)
R. 22 E.
475 000 FEET
1 700 000 FEET
T. 17 S.
(Joins sheet 161)
(Joins sheet 169)
460 000 FEET
(Joins sheet 159)
1 695 000 FEET
1 Mile
5 000 Feet
Scale 1:15 840
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
475
475A
467
water
Danks Corner
Bellview Heights
17
16
15
14
20
21
22
23
ArB
ArC
AdB
Ho
KeB
KeA
KeC
SpB
SpC
ApB
CaB
CaC
GaB
PeB
Pp
Pr
JuB
HaB
PB
UaF
TaB
FmB

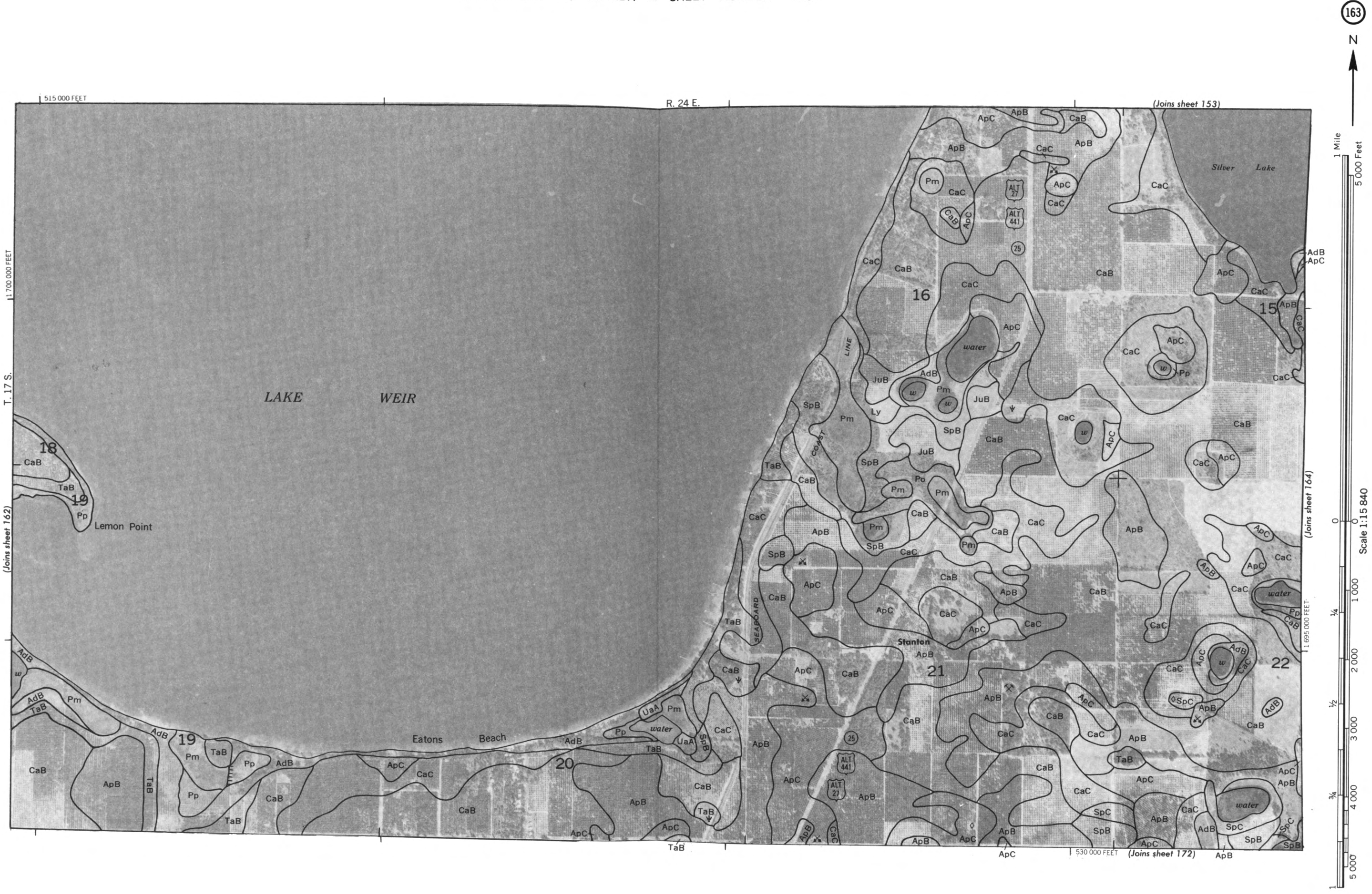
# MARION COUNTY, FLORIDA — SHEET NUMBER 161

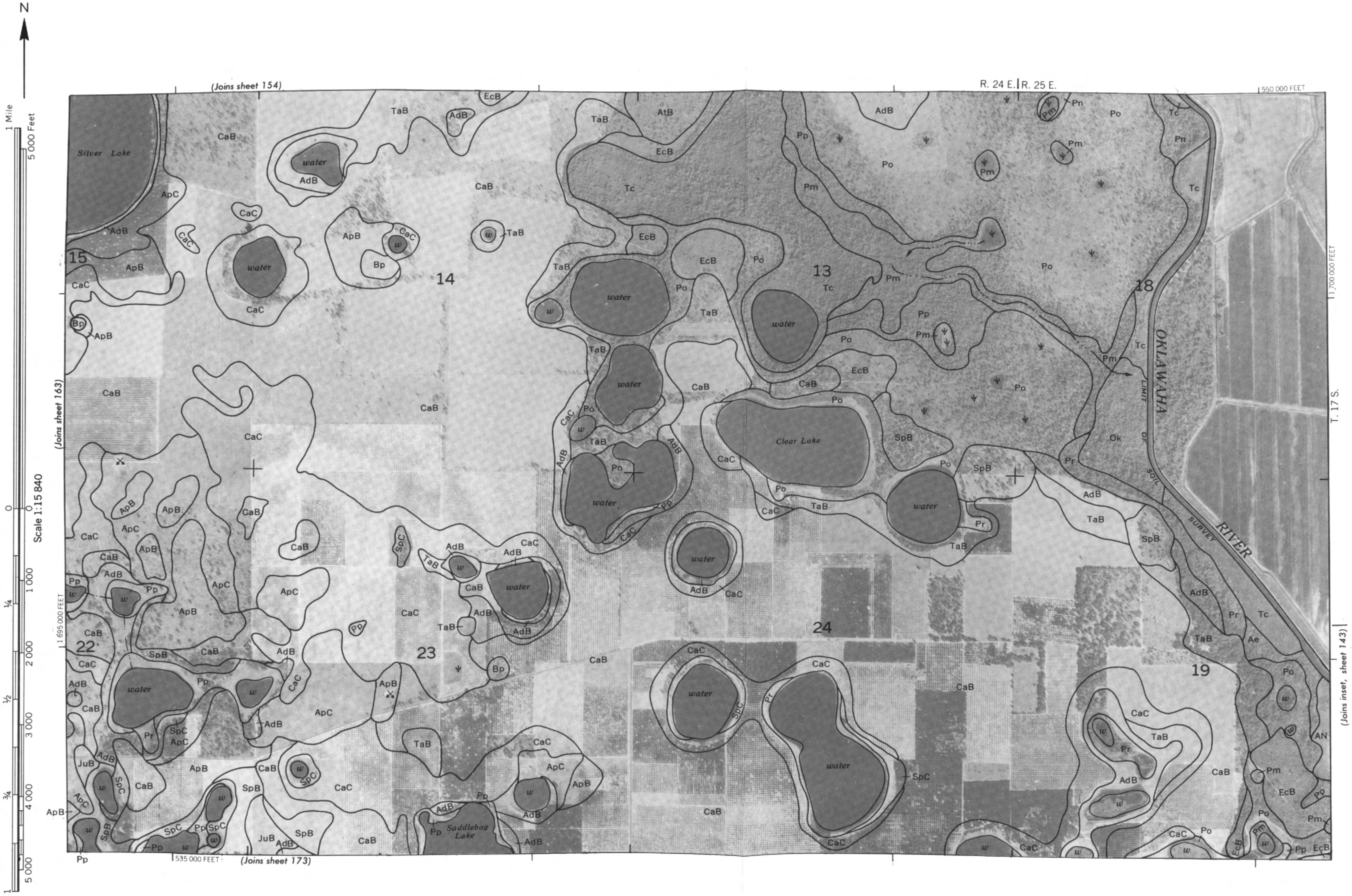

N
480 000 FEET
R. 22 E. | R. 23 E.
(Joins sheet 151)
1 700 000 FEET
T. 17 S.
(Joins sheet 160)
(Joins sheet 162)
1 695 000 FEET
(Joins sheet 170)
495 000 FEET
Summerfield
COAST
LINE
SEABOARD
301
27
441
500
19
18
17
16
20
19
20
21
water
MINE PIT
UaF
CaB
SpB
KeB
ArB
ArC
HaB
CaC
GaB
KaB
Pm
PeB
ApB
ApC
KeC
LoC
BcB
BoC
FmB
FeB
FeC
FgC
WgB
WgC
WaC
ZuB
LoB
LoA
Po
HaC
SpC
w
1 Mile
5 000 Feet
0
¼
½
¾
1 000
2 000
3 000
4 000
Scale 1:15 840

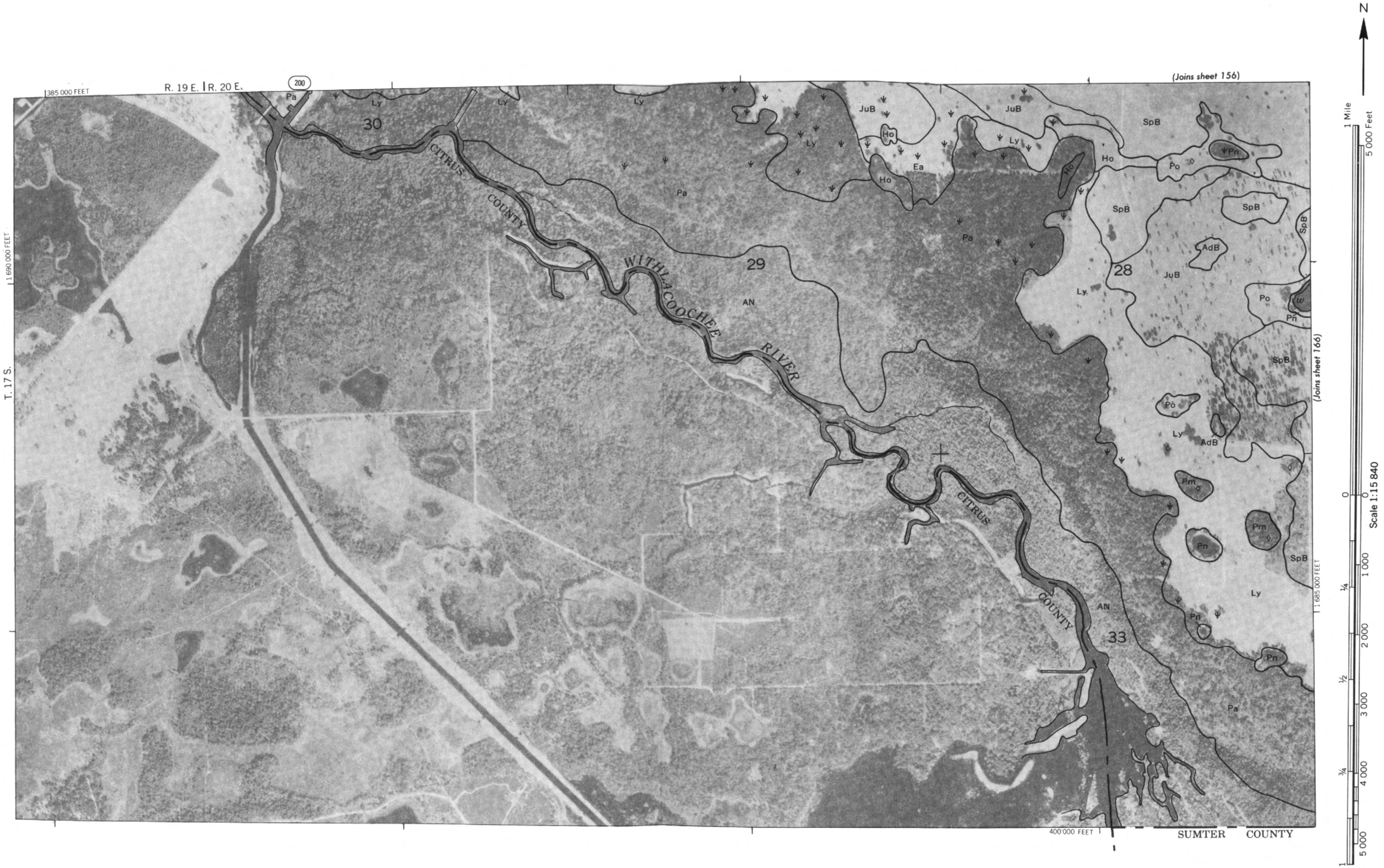
# MARION COUNTY, FLORIDA — SHEET NUMBER 162


N
1 Mile
5 000 Feet
Scale 1:15 840
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
(Joins sheet 152)
R. 23 E.
510 000 FEET
(Joins sheet 161)
(Joins sheet 163)
(Joins sheet 171)
500 000 FEET
1 695 000 FEET
1 700 000 FEET
T. 17 S.
Little Lake Weir
LAKE WEIR
Bird Island
Orange Blossom Hills
Sunset Harbor
water
500
27
441
13
14
15
16
21
22
23
24
CaB
CaC
AdB
Pm
PB
Pp
ArB
ApB
ApC
KeB
GaB
TaB
UaA
SpB
JuB
Ly
ZuB
Po

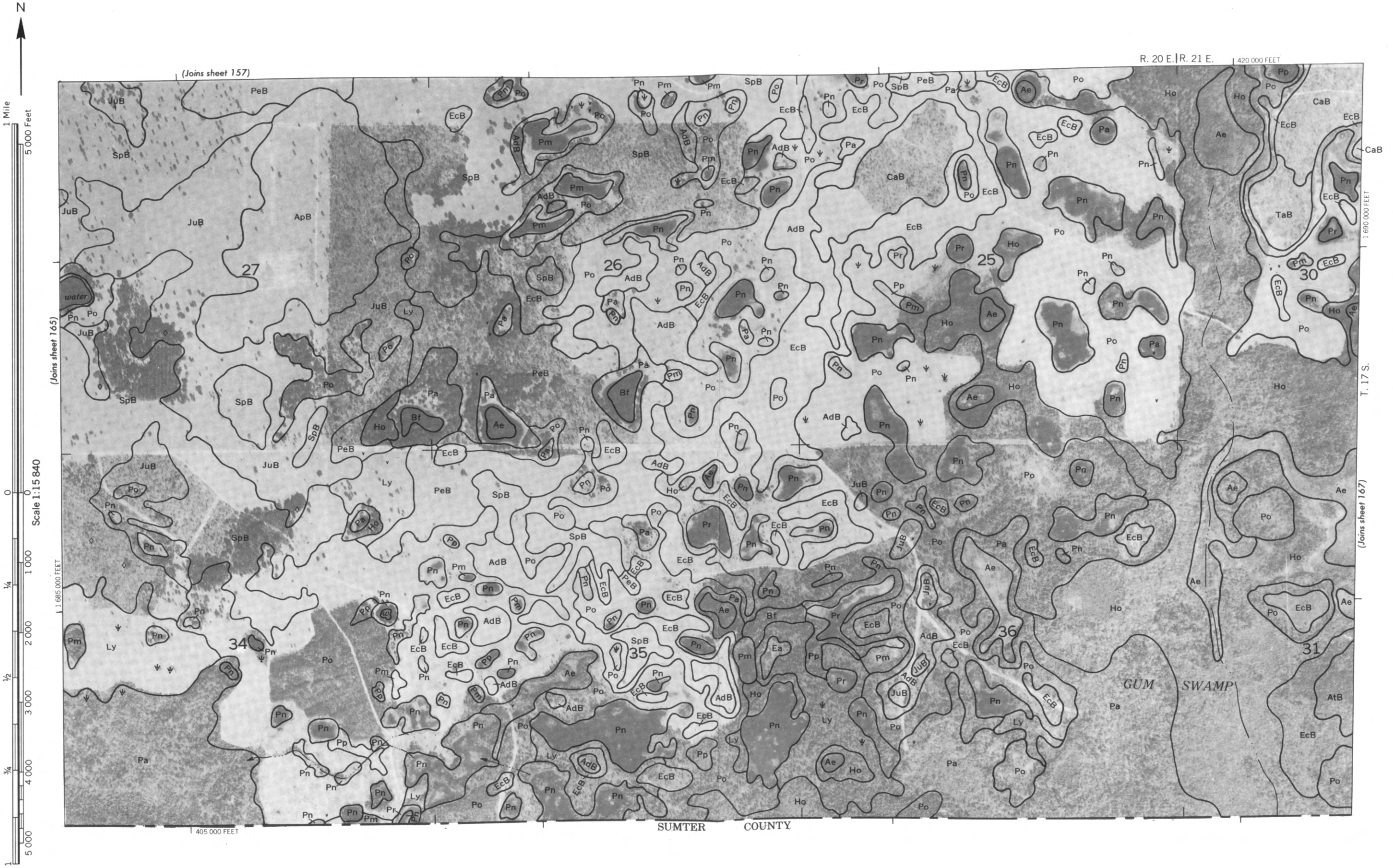
MARION COUNTY, FLORIDA — SHEET NUMBER 163


163
N
515 000 FEET
R. 24 E.
(Joins sheet 153)
1 700 000 FEET
T. 17 S.
(Joins sheet 162)
(Joins sheet 164)
1 695 000 FEET
530 000 FEET
(Joins sheet 172)
LAKE WEIR
Silver Lake
Lemon Point
Eatons Beach
Stanton
SEABOARD COAST LINE
ALT 27
ALT 441
25
15
16
18
19
20
21
22
CaB
CaC
ApB
ApC
AdB
TaB
Pp
Pm
Po
SpB
SpC
JuB
Ly
UaA
w
water
1 Mile
5 000 Feet
0
¼
½
¾
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840


N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
0
¼
½
¾
1
Scale 1:15 840
(Joins sheet 154)
R. 24 E.
R. 25 E.
550 000 FEET
1 700 000 FEET
T. 17 S.
(Joins sheet 163)
1 695 000 FEET
(Joins inset, sheet 143)
535 000 FEET
(Joins sheet 173)
Silver Lake
Clear Lake
Saddlebag Lake
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
13
14
15
18
19
22
23
24
water
w
CaB
CaC
ApB
ApC
AdB
AtB
Bp
EcB
TaB
Tc
Po
Pm
Pn
Pp
Pr
Ok
SpB
SpC
JuB
Ae
AN

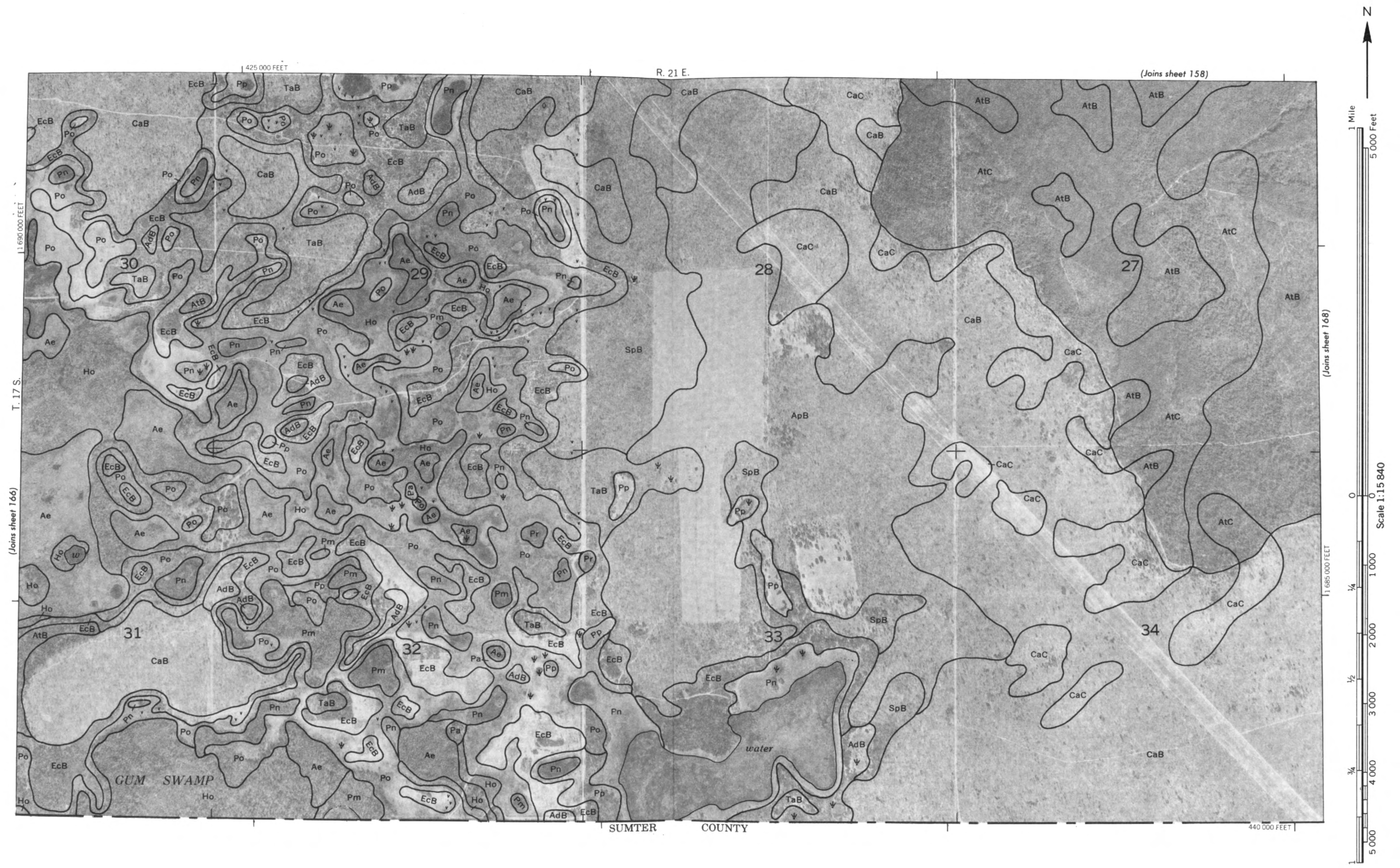

N
(Joins sheet 156)
(Joins sheet 166)
385 000 FEET
R. 19 E. | R. 20 E.
200
1 690 000 FEET
T. 17 S.
1 685 000 FEET
400 000 FEET
30
29
28
33
WITHLACOOCHEE RIVER
CITRUS COUNTY
CITRUS COUNTY
SUMTER COUNTY
Pa
Ly
JuB
Ho
Ea
SpB
Po
Pn
AdB
AN
Pm
W
1 Mile
5 000 Feet
0
¼
½
¾
1
0
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840

# MARION COUNTY, FLORIDA — SHEET NUMBER 166

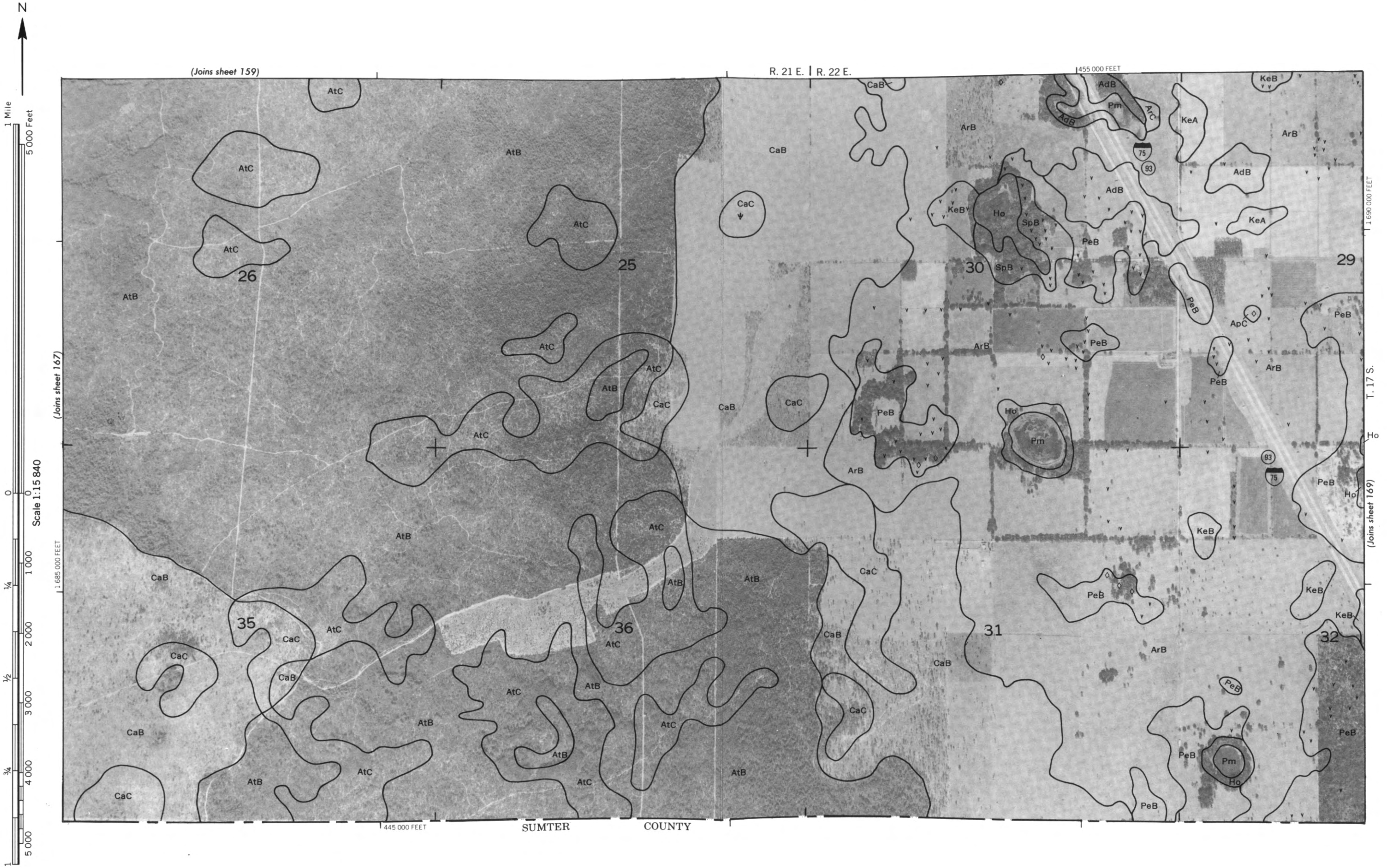

N
1 Mile
5 000 Feet
0
¼
½
¾
1
1 000
2 000
3 000
4 000
5 000
Scale 1:15 840
(Joins sheet 157)
(Joins sheet 165)
(Joins sheet 167)
R. 20 E.
R. 21 E.
T. 17 S.
420 000 FEET
1 690 000 FEET
1 685 000 FEET
405 000 FEET
SUMTER COUNTY
GUM SWAMP
water
25
26
27
30
31
34
35
36
JuB
SpB
PeB
ApB
AdB
EcB
CaB
TaB
AtB
JuB
Pn
Po
Pm
Pa
Pr
Pp
Ho
Ae
Bf
Ea
Ly

# MARION COUNTY, FLORIDA — SHEET NUMBER 167

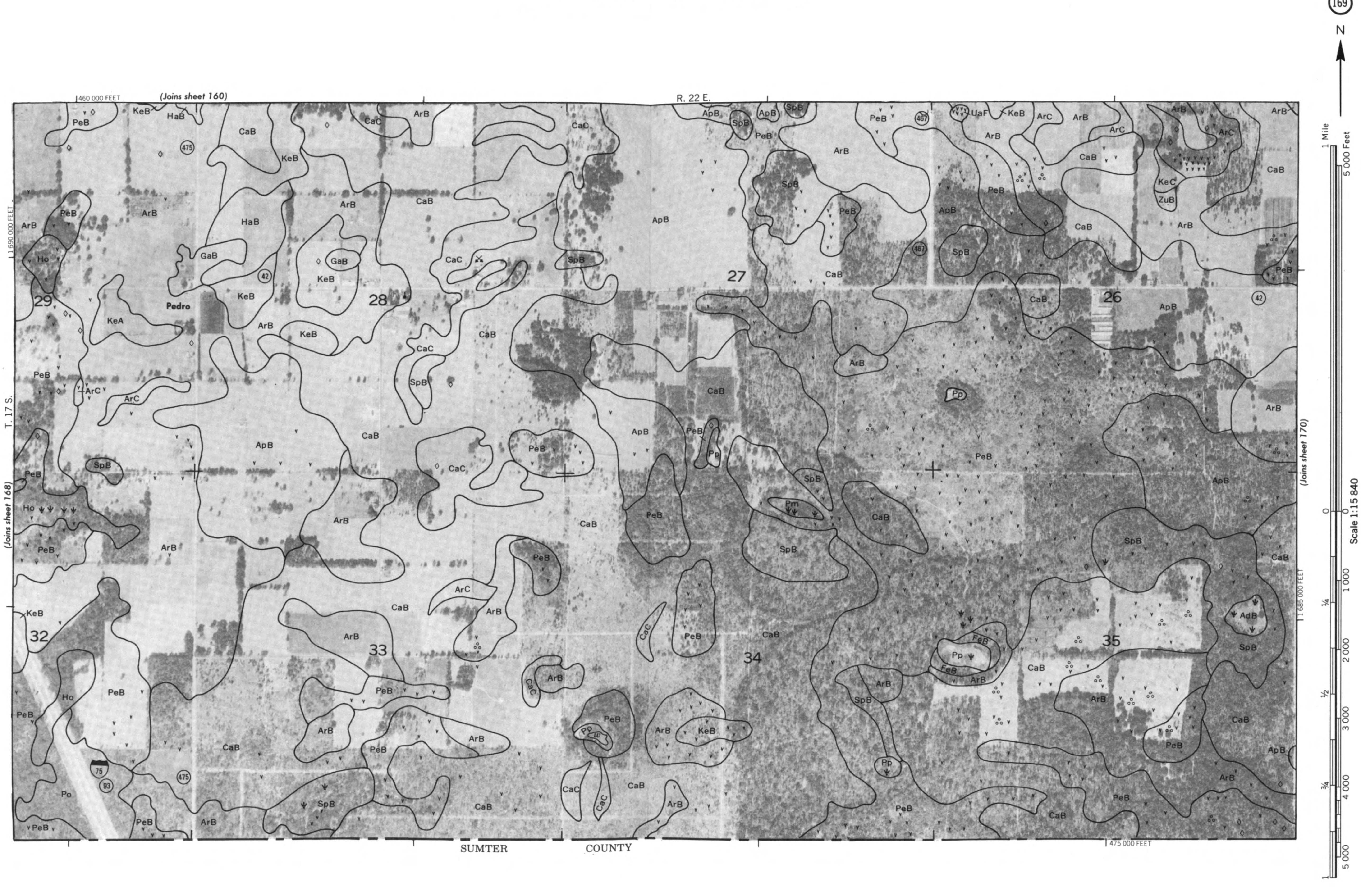
167


N
425 000 FEET
R. 21 E.
(Joins sheet 158)
1 690 000 FEET
T. 17 S.
(Joins sheet 166)
(Joins sheet 168)
1 685 000 FEET
440 000 FEET
SUMTER COUNTY
GUM SWAMP
water
27
28
29
30
31
32
33
34
Ae
AdB
ApB
AtB
AtC
CaB
CaC
EcB
Ho
Pa
Pm
Pn
Po
Pp
Pr
SpB
TaB
w
1 Mile
5 000 Feet
0
¼
½
¾
1
1000
2000
3000
4000
5000
Scale 1:15 840

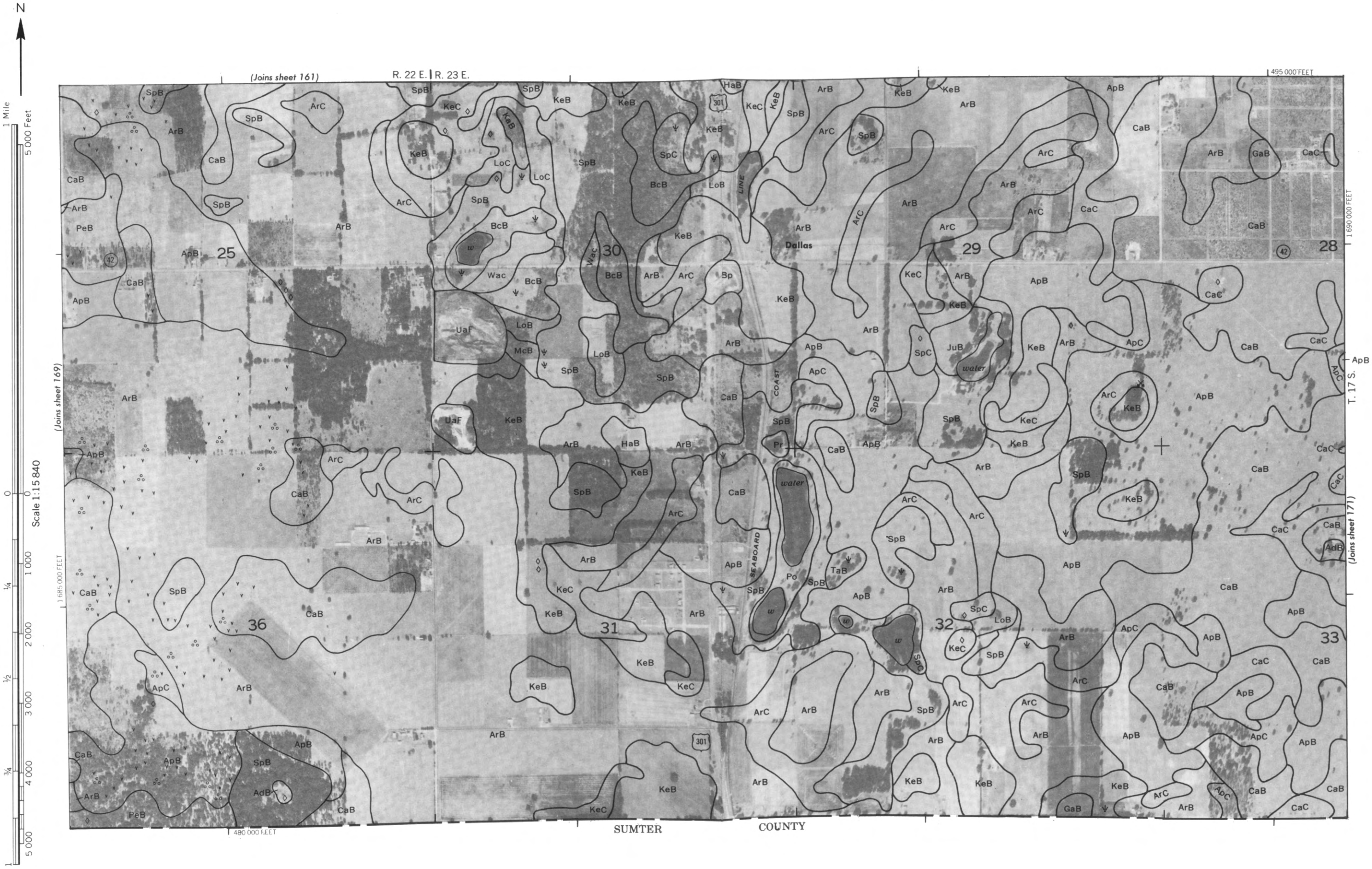
MARION COUNTY, FLORIDA — SHEET NUMBER 168

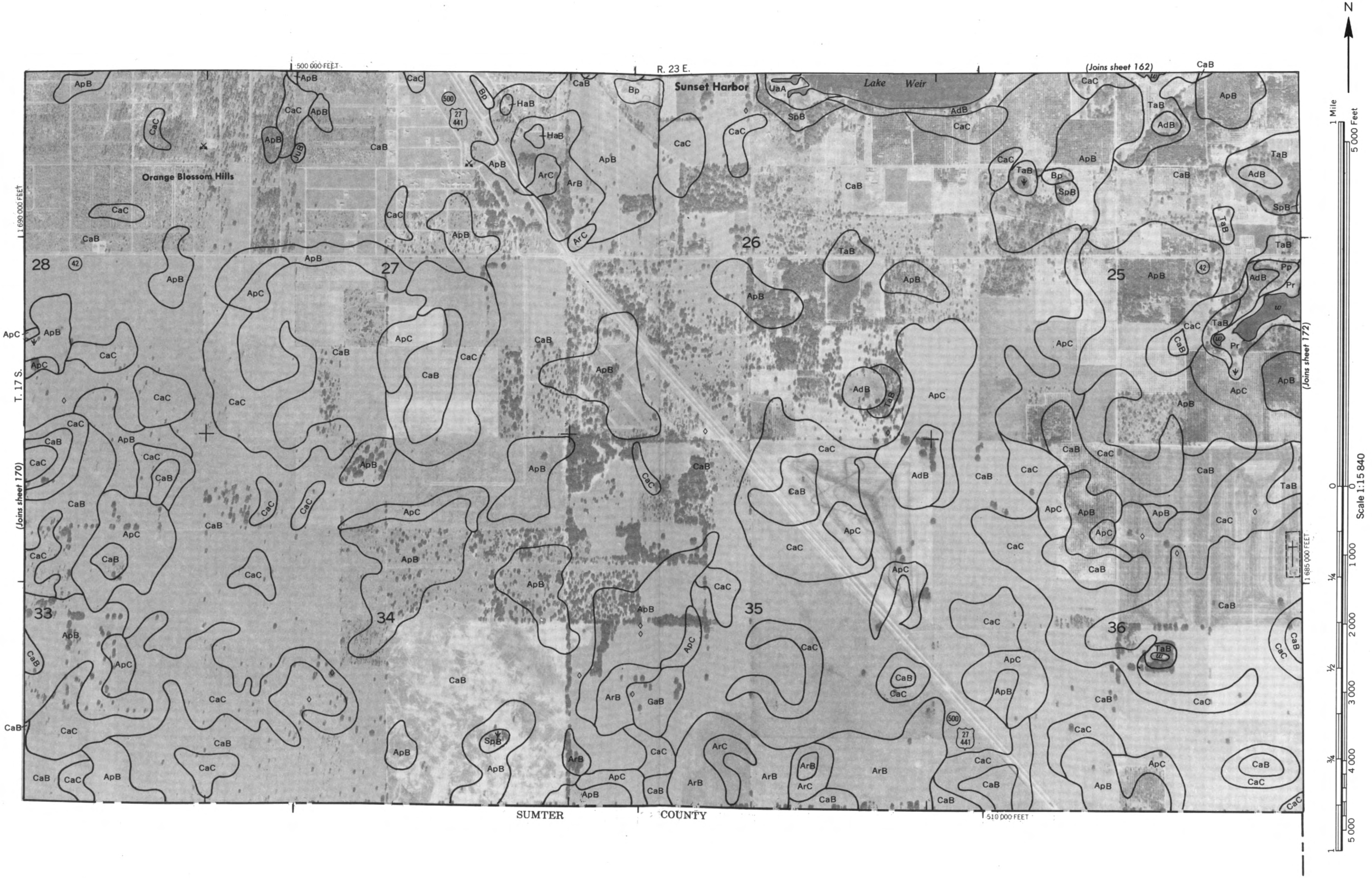

N
1 Mile
5 000 Feet
Scale 1:15 840
0
1/4
1/2
3/4
1
0
1 000
2 000
3 000
4 000
5 000
(Joins sheet 159)
R. 21 E.
R. 22 E.
455 000 FEET
1 690 000 FEET
1 685 000 FEET
445 000 FEET
(Joins sheet 167)
(Joins sheet 169)
T. 17 S.
SUMTER
COUNTY
25
26
29
30
31
32
35
36
75
93
AtC
AtB
CaB
CaC
ArB
ArC
AdB
Pm
KeA
KeB
Ho
SpB
PeB
ApC

# MARION COUNTY, FLORIDA — SHEET NUMBER 169

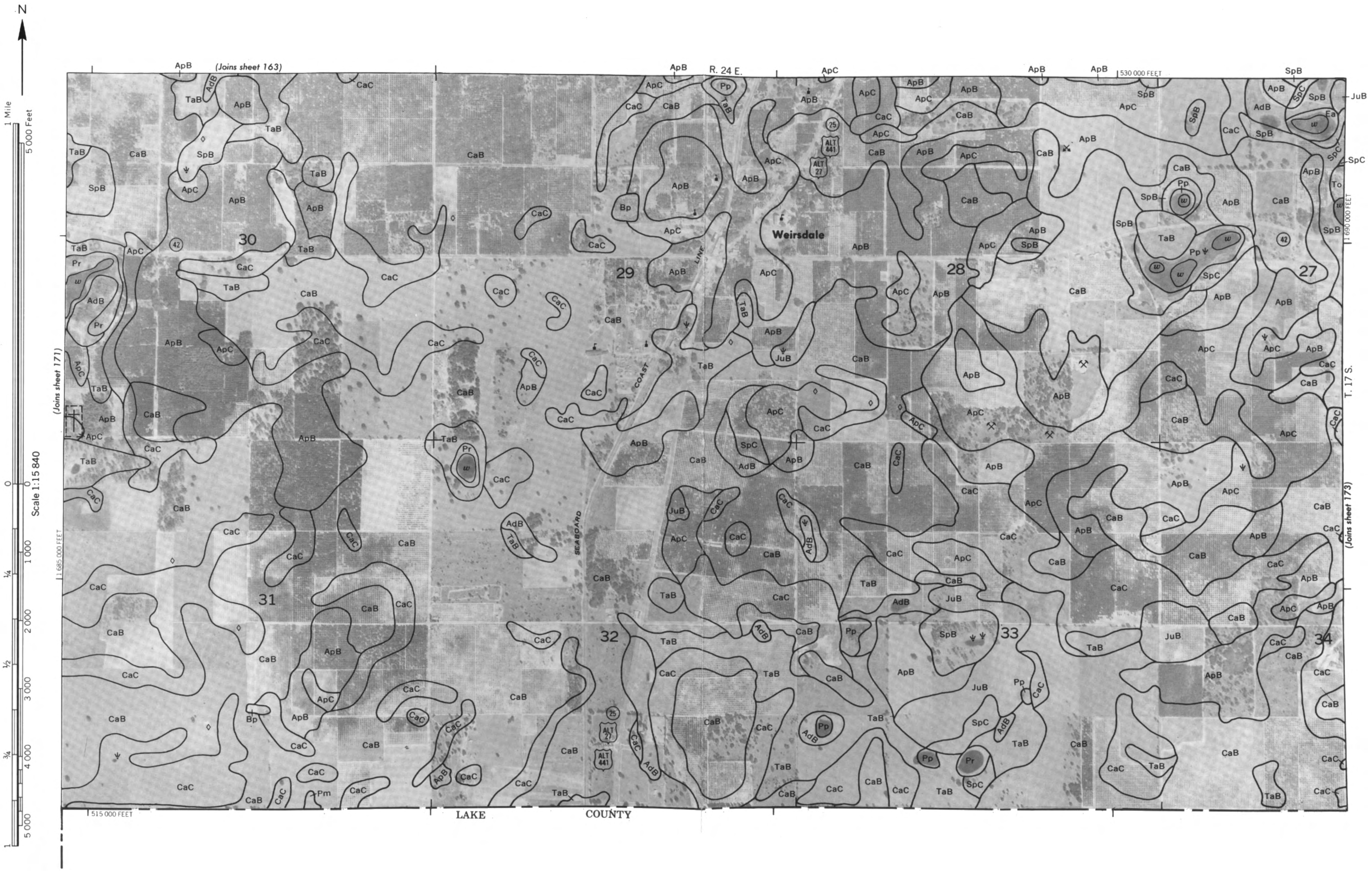

169
N
460 000 FEET
(Joins sheet 160)
R. 22 E.
1 690 000 FEET
T. 17 S.
(Joins sheet 168)
(Joins sheet 170)
1 685 000 FEET
475 000 FEET
SUMTER
COUNTY
Pedro
26
27
28
29
32
33
34
35
475
42
467
75
93
PeB
KeB
HaB
CaB
CaC
ArB
ApB
SpB
ArC
UaF
KeC
ZuB
Ho
GaB
KeA
Pp
Pm
FeB
AdB
Po
1 Mile
5 000 Feet
Scale 1:15 840
0
1000
2000
3000
4000
5000
¼
½
¾
1

MARION COUNTY, FLORIDA — SHEET NUMBER 170

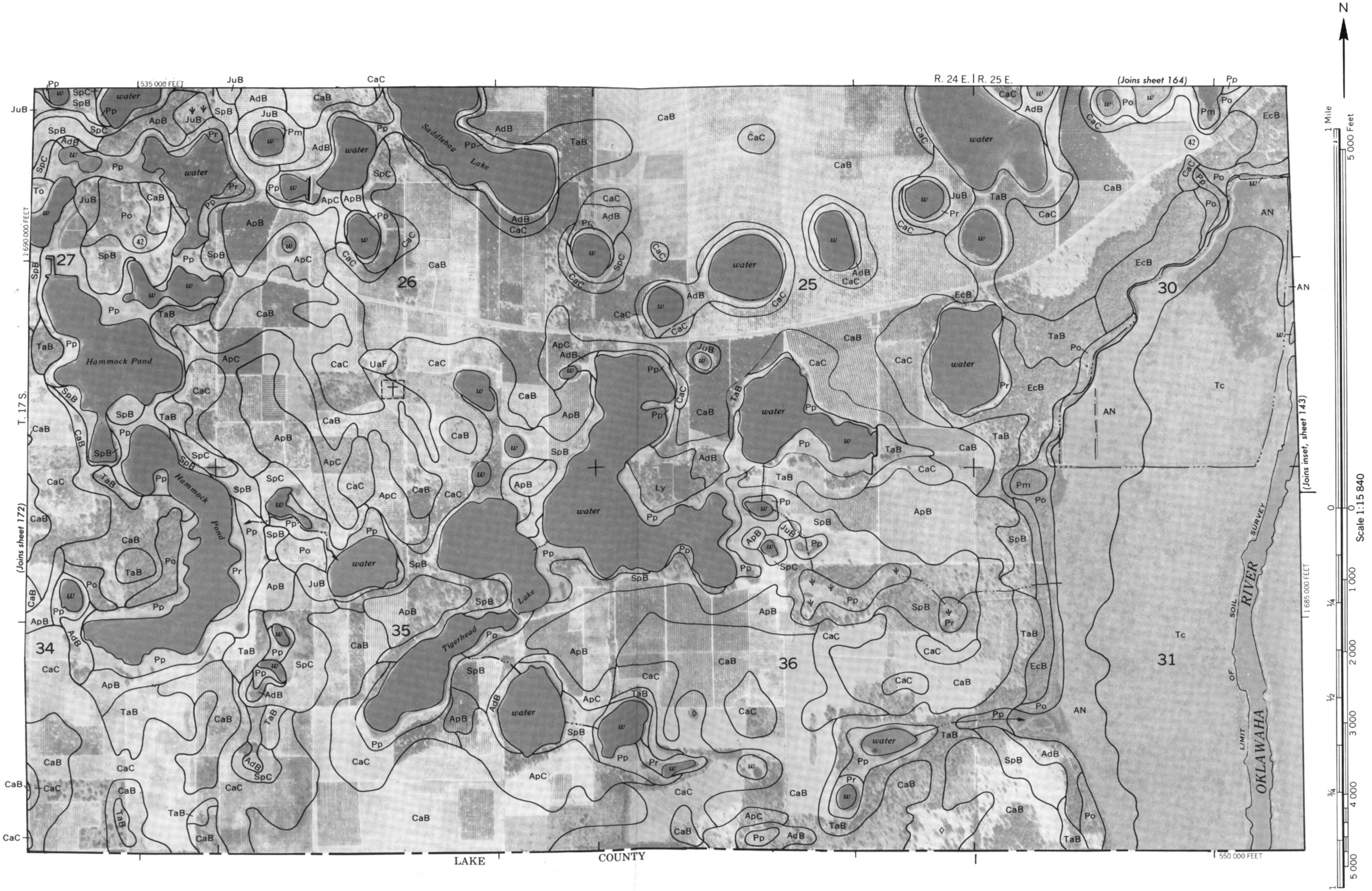

N
1 Mile
5 000 Feet
0
0
Scale 1:15 840
1 000
1/4
2 000
1/2
3 000
3/4
4 000
5 000
1
(Joins sheet 161)
R. 22 E.
R. 23 E.
495 000 FEET
1 690 000 FEET
T. 17 S.
(Joins sheet 171)
(Joins sheet 169)
1 685 000 FEET
480 000 FEET
SUMTER
COUNTY
Dallas
LINE
COAST
SEABOARD
301
42
25
30
29
28
36
31
32
33
SpB
ArC
ArB
CaB
CaB
ArB
SpB
SpB
KeC
KaB
KeB
LoC
LoC
ArC
SpB
BcB
w
Wac
BcB
KeB
HaB
KeC
KeB
SpB
SpC
BcB
LoB
Wac
BcB
ArB
ArC
Bp
KeB
ArB
SpB
ArC
SpB
KeB
KeB
ArB
ApB
CaB
ArC
ArB
ArB
ArC
CaC
ArB
GaB
CaC
PeB
ApB
CaB
ApB
UaF
LoB
McB
LoB
SpB
SpB
KeC
ArB
KeB
ArB
ApB
ApC
SpC
JuB
water
KeB
ArB
ApC
CaC
CaB
CaC
ApB
ApC
ArB
UaF
KeB
ApB
ArC
CaB
ArC
ArB
HaB
ArB
KeB
SpB
CaB
SpB
Pr
CaB
ApB
SpB
KeC
KeB
ArC
KeB
ApB
CaC
SpB
CaB
ArB
CaB
water
ArC
ArC
SpB
KeB
CaC
CaB
AdB
ArB
SpB
CaB
ArB
ArC
ApB
SpB
Po
SpB
TaB
ApB
ArB
ApB
CaB
KeC
KeB
ArB
SpB
w
w
w
SpC
LoB
KeC
SpB
ArB
ApC
ApB
CaB
SpC
CaB
ApC
KeB
KeB
KeC
ArC
ArB
ArB
SpB
ArC
ArC
ArC
CaB
ApB
CaC
ApB
ArB
ApB
ApC
ApB
CaB
PeB
AdB
SpB
ApB
ArB
ArB
KeB
KeC
ArB
KeB
KeB
KeB
GaB
ArC
ArB
ApC
CaB
CaC
CaB


N
500 000 FEET
R. 23 E.
(Joins sheet 162)
Sunset Harbor
Lake Weir
Orange Blossom Hills
1 690 000 FEET
T. 17 S.
(Joins sheet 170)
(Joins sheet 172)
1 685 000 FEET
SUMTER COUNTY
510 000 FEET
28
27
26
25
33
34
35
36
42
500
27
441
ApB
ApC
AdB
ArB
ArC
Bp
CaB
CaC
GaB
HaB
JuB
Pp
Pr
SpB
TaB
UaA
w
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840

# MARION COUNTY, FLORIDA — SHEET NUMBER 172


N
1 Mile
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000
¼
½
¾
1
Scale 1:15 840
(Joins sheet 163)
(Joins sheet 171)
(Joins sheet 173)
R. 24 E.
T. 17 S.
530 000 FEET
1 690 000 FEET
1 685 000 FEET
515 000 FEET
Weirsdale
SEABOARD
COAST
LINE
LAKE
COUNTY
25
42
ALT 441
ALT 27
27
28
29
30
31
32
33
34
ApB
ApC
AdB
Bp
CaB
CaC
Ea
JuB
Pm
Pp
Pr
SpB
SpC
TaB
To
w

# MARION COUNTY, FLORIDA — SHEET NUMBER 173


N
(Joins sheet 164)
R. 24 E. | R. 25 E.
535 000 FEET
550 000 FEET
1 690 000 FEET
1 685 000 FEET
T. 17 S.
(Joins sheet 172)
(Joins inset, sheet 143)
LAKE
COUNTY
Saddlebag Lake
Hammock Pond
Hammock Pond
Tigerhead Lake
OKLAWAHA RIVER
LIMIT OF SOIL SURVEY
42
25
26
27
30
31
34
35
36
water
Scale 1:15 840
1 Mile
0
¼
½
¾
5 000 Feet
0
1 000
2 000
3 000
4 000
5 000